



ProLiant ML370

Setup and Installation Guide

Second Edition (December 1999)
Part Number 120137-002
Compaq Computer Corporation

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About This Guide

This guide is designed to be used as step-by-step instructions for installation and as a reference for operation, troubleshooting, and future upgrades.

Text Conventions

This document uses the following conventions to distinguish elements of text:

Keys	Keys appear in boldface. A plus sign (+) between two keys indicates that they should be pressed simultaneously.
USER INPUT	User input appears in a different typeface and in uppercase.
<i>FILENAMES</i>	File names appear in uppercase italics.
Menu Options, Command Names, Dialog Box Names	These elements appear in initial capital letters.
COMMANDS, DIRECTORY NAMES, and DRIVE NAMES	These elements appear in uppercase.
Type	When you are instructed to <i>type</i> information, type the information without pressing the Enter key.
Enter	When you are instructed to <i>enter</i> information, type the information and then press the Enter key.

Symbols in Text

These symbols may be found in the text of this guide. They have the following meanings.



WARNING: Text set off in this manner indicates that failure to follow directions in the warning could result in bodily harm or loss of life.



CAUTION: Text set off in this manner indicates that failure to follow directions could result in damage to equipment or loss of information.

IMPORTANT: Text set off in this manner presents clarifying information or specific instructions.

NOTE: Text set off in this manner presents commentary, sidelights, or interesting points of information.

Symbols on Equipment

These icons may be located on equipment in areas where hazardous conditions may exist.



Any surface or area of the equipment marked with these symbols indicates the presence of electrical shock hazards. Enclosed area contains no operator serviceable parts.

WARNING: To reduce the risk of injury from electrical shock hazards, do not open this enclosure.



Any RJ-45 receptacle marked with these symbols indicates a Network Interface Connection.

WARNING: To reduce the risk of electrical shock, fire, or damage to the equipment, do not plug telephone or telecommunications connectors into this receptacle.



Any surface or area of the equipment marked with these symbols indicates the presence of a hot surface or hot component. If this surface is contacted, the potential for injury exists.

WARNING: To reduce the risk of injury from a hot component, allow the surface to cool before touching.



Power Supplies or Systems marked with these symbols indicate the equipment is supplied by multiple sources of power.

WARNING: To reduce the risk of injury from electrical shock, remove all power cords to completely disconnect power from the system.

Rack Stability



WARNING: To reduce the risk of personal injury or damage to the equipment, be sure that:

- The leveling jacks are extended to the floor.
 - The full weight of the rack rests on the leveling jacks.
 - The stabilizing feet are attached to the rack if it is a single rack installation.
 - The racks are coupled together in multiple rack installations.
 - Only one component is extended at a time. A rack may become unstable if more than one component is extended for any reason.
-

Server Warnings and Precautions



22.6 kg
50 lb

WARNING: Any product or assembly marked with these symbols indicates that the component exceeds the recommended weight for one individual to handle safely.

WARNING: To reduce the risk of personal injury or damage to the equipment, observe local occupational health and safety requirements and guidelines for manual material handling.

Getting Help

If you have a problem and have exhausted the information in this guide, you can get further information and other help in the following locations.

Compaq Technical Support

In North America, call the Compaq Technical Phone Support Center at 1-800-OK-COMPAQ¹. This service is available 24 hours a day, 7 days a week.

Outside North America, call the nearest Compaq Technical Support Phone Center. Telephone numbers for worldwide Technical Support Centers are listed on the Compaq website. Access the Compaq website by logging on to the Internet:

<http://www.compaq.com>

Be sure to have the following information available before you call Compaq:

- Technical support registration number (if applicable)
- Product serial numbers
- Product model names and numbers
- Applicable error messages
- Add-on boards or hardware
- Third-party hardware or software
- Operating system type and revision level
- Detailed, specific questions

Compaq Website

The Compaq website has information on this product as well as the latest drivers and Flash ROM images. You can access the Compaq website by logging on to the Internet:

<http://www.compaq.com>

¹ For continuous quality improvement, calls may be recorded or monitored.

Compaq Authorized Reseller

For the name of your nearest Compaq authorized reseller:

- In the United States, call 1-800-345-1518.
- In Canada, call 1-800-263-5868.
- Elsewhere, see the Compaq website for locations and telephone numbers.

Chapter **1**

Server Features

This guide provides information on the Compaq ProLiant ML370 tower and rack servers featuring the Intel Pentium III processor and 133-MHz system bus.

Compaq ProLiant ML370 servers are business-critical servers that support the following components:

- Pentium III processors
- 133-MHz system bus
- Dual processing capabilities
- 133-MHz registered SDRAM Error Checking and Correcting (ECC) Memory upgradeable to 4 gigabytes (when available)
- Hot-plug drive cage for up to six Wide Ultra2 SCSI hard disk drives
- Integrated Dual Channel Wide Ultra2 SCSI Controller upgradeable to the Integrated Smart Array Controller
- Compaq hot-plug redundant power supplies (optional)
- Integrated Management Display (optional)

Standard chassis configurations for ProLiant ML370 tower and rack servers are shown in the following illustrations.

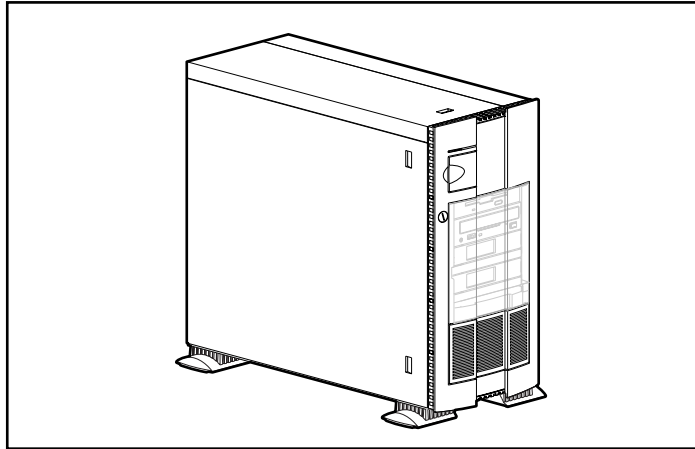


Figure 1-1. Compaq ProLiant ML370 tower server

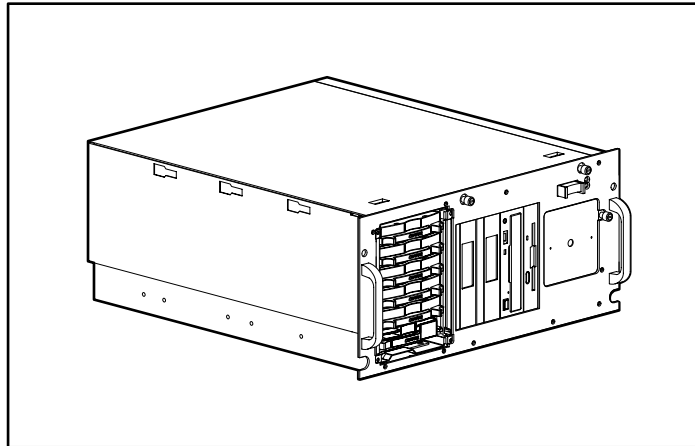


Figure 1-2. Compaq ProLiant ML370 rack server

Customer Support

Compaq servers are backed by comprehensive and flexible customer support programs. See “About This Guide” and your SmartStart and Support Software CD for information about contacting Compaq authorized resellers or Compaq authorized service providers in your area.

Standard Features

The features described in the following sections are standard on the ProLiant ML370 tower and rack servers, unless otherwise noted.

Processors and System Memory

Compaq ProLiant ML370 servers support advanced processor and memory features:

- Single-processor unit with one Pentium III processor and integrated Level 2 Cache
- Option to upgrade to a two-processor unit by adding an optional processor
- Error Checking and Correcting (ECC) for memory error detection and correction
- 128-MB, 133-MHz registered SDRAM populating one memory slot
- 64-bit system memory expandable to 4 gigabytes
- Slots available for 64-, 128-, 256-, 512-MB, or 1-GB (when available), 133-MHz DIMM modules
- Support for up to three additional DIMM modules
- Support for installing single DIMM modules

Expansion Slots

Compaq servers provide support for peripheral components:

- Six expansion slots
 - Four 64-bit PCI slots
 - Two 32-bit PCI slots
- Peripheral transactions at a clock speed of up to 33 MHz through the PCI system bus.

Disk Controllers

Compaq ProLiant ML370 servers include a standard disk controller with the following features:

- Integrated Dual Channel Wide Ultra2 SCSI Controller on the PCI local bus upgradeable to the Integrated Smart Array Controller
- Two SCSI ports supporting up to six internal, Wide Ultra2 SCSI hot-plug hard drives
- Support for up to three non-hot-plug SCSI devices or 15 external drives without using an expansion slot.
- Maximum data transfer rate of 80 megabytes per second (MB/s) on each SCSI bus.

Several optional controller boards for expanding storage capacity or running arrays are available from Compaq authorized resellers:

- Smart Array 221 Controller
- Smart Array 3200 Controller
- Smart Array 4200 Controller
- 64-Bit Dual Channel Wide Ultra2 SCSI Adapter
- Integrated Smart Array Controller supporting the following features:
 - ❑ 16 MB total memory, 8 MB Read-Ahead Cache
 - ❑ Support for up to six internal Wide Ultra2 SCSI hot-plug drives in RAID 0, RAID 1, RAID 0+1, and RAID 5
 - ❑ Support for external backup tape drives and external storage through the SCSI connector on the rear panel
 - ❑ Migration from any RAID level to any RAID level
 - ❑ Migration from any stripe size to any stripe size
 - ❑ Support for Low Voltage Differential (LVD) SCSI devices on both channels
 - ❑ Pre-Failure Notification and Pre-Failure Warranty through the Compaq Insight Manager
 - ❑ Online spares
 - ❑ Online capacity expansion

For information on installing a SCSI hard drive in your ProLiant ML370 server, refer to the documentation on the Documentation CD and the SmartStart Support Software CD shipped with your server. When you configure SCSI drives from the support software provided by the operating system vendor, you must also run the driver support diskettes that shipped with your server to properly configure the SCSI drive controls. For additional information, refer to the Integrated SCSI Controller Setup Guide on the Documentation CD.

Network Controller

The standard Network Integrated Controller (NIC) provided with your ProLiant ML370 server is a NC3163 Fast Ethernet NIC Embedded 10/100 WOL installed on a PCI local bus. The controller provides an RJ-45 connector for a 10BaseT or 100TX Ethernet network connection.

For information concerning the integrated network controller, refer to the Documentation CD shipped with your server.

Removable Storage Media

Your Compaq ProLiant ML370 server provides a maximum of 10 drive bays. Four bays are located in the removable media drive area and six are located in the hot-plug drive cage. Standard configurations for drive bays include:

- One-third height dedicated, removable media drive bay occupied by a 1.44-MB diskette drive
- One-half height removable media drive bay occupied by an IDE CD-ROM drive
- Two available half-height, 5.25-inch, removable media drive bays
- Support for up to six 1-inch hot-plug Wide Ultra2 SCSI drives in the hot-plug drive cage

Standard Interfaces

ProLiant ML370 servers are equipped with the following standard interfaces:

- Integrated Dual Channel Wide Ultra2 SCSI Controller on Port 1 (internal and external) and Port 2 (internal only)
- Serial (2)
- Video
- Parallel
- Hot-plug keyboard
- Mouse
- NC3163 Fast Ethernet NIC Embedded 10/100 WOL with RJ-45 interface
- IDE interface for CD-ROM drive
- Floppy connector interface
- LCD connector interface

Video

Standard video integration in ProLiant ML370 servers includes:

- Integrated Video Controller with a maximum resolution of 1280 x 1024 non-interlaced resolution at 16M colors.
- Support for SVGA, VGA, and EGA graphics resolution
- 4-MB video memory

ROM

Compaq ROM features include:

- Software-upgradeable firmware
- ROMPaq Utility used to upgrade system ROM

Power Supply

ProLiant ML370 standard power supply includes:

- 325-watt power supply
- Compaq hot-plug redundant power supply unit (optional)

Warranty

ProLiant ML370 servers are equipped with the following standard warranties:

- Three-Year, On-Site Limited Worldwide Warranty
- Pre-Failure Warranty on processors, memory, and hard drives

Pre-Failure Warranty

The Compaq ProLiant ML370 server includes a Pre-Failure Warranty for processors, hard drives, and memory purchased from Compaq through Compaq authorized resellers. Under the terms of this warranty, supported components are eligible for replacement before they actually fail, provided that you use Compaq Insight Manager and that the system determines that supported components have degraded below predetermined reliability thresholds within the product warranty period.

Insight Manager Alert

When Insight Manager alerts you that a component may be eligible for Pre-Failure Warranty replacement, follow the on-screen instructions or contact a Compaq authorized service provider in your area. A yellow status indicator on the Insight Manager control panel signals that a component is in a degraded condition and recommends that you replace the component in a pre-failure condition.

Server Configuration and Management

Compaq servers offer an extensive set of features and optional tools to support effective server management and configuration:

- Default Configuration
- Compaq SmartStart
- Server Management
- Compaq Insight Manager
- Compaq System Configuration Utility
- Automatic Server Recovery-2 (ASR-2)
- Compaq Integrated Remote Console
- Compaq Integrated Management Log
- Server Health Log
- Integrated Management Display Option Kit
- Remote Insight Board Option Kit

Default Configuration

When the system starts, the system ROM detects the pre-configured state of the hardware and provides default configuration settings for most devices. By providing this initialization, the system can run diagnostic and other software applications before running SmartStart and other system configuration programs.

NOTE: If you format and partition your boot drive before running SmartStart, you will not be able to create a system configuration partition.

As part of the default configuration process, you are prompted for your intended installation operating system (OS). On subsequent restarts, you may change your OS selection as needed.

NOTE: An information message indicating that you are running with a default configuration occurs each time you start the system until you run the System Configuration program.

Compaq SmartStart

SmartStart, stored on the SmartStart and Support Software CD, is the intelligent way to configure your Compaq server with Novell, Microsoft, SCO, and IBM system software. SmartStart uses a step-by-step process to configure the server and to load the system software, thereby achieving a well-integrated server and ensuring maximum dependability and supportability.

The SmartStart and Support Software CD also contains the Compaq System Configuration Utility and ROMPaq. For information about using SmartStart utilities, refer to the Server Setup and Management Pack shipped with your server.

Server Management

Server management features provide in-depth monitoring, analysis, and control of the fault-tolerance, performance, and configuration aspects of your servers. Server management features include:

- Server parameter tracking
- Server fault tolerance
- Recovery services
- Remote services

For additional information about server management features, refer to the Documentation CD shipped with your server.

Compaq Insight Manager

Compaq Insight Manager is installed from the Compaq Management CD and is an easy-to-use, intuitive software utility designed for collecting server information. Insight Manager performs the following functions:

- Forwarding server alerts and fault conditions
- Monitoring fault conditions and server performance
- Controlling server security and configurations
- Controlling servers or server groups remotely
- Initiating rapid recovery services

In Compaq servers, each hardware subsystem, including disk storage, system memory, and system processor, has a robust set of management capabilities. The Compaq Full-Spectrum Fault Management prevents faults before they happen, keeps the system up and running in the unlikely event of a failure, and delivers rapid recovery to normal server operation after a service disruption.

For information about Compaq Insight Manager, refer to the Server Setup and Management Pack shipped with your server.

Compaq System Configuration Utility

The Compaq System Configuration Utility performs a wide range of configuration functions:

- Configuring PCI boards automatically
- Providing switch and jumper settings
- Resolving resource conflicts in memory, port addresses, and interrupt request (IRQs) settings
- Managing memory installation, processor upgrades, array controller upgrades, and configuration of mass storage devices such as hard drives, tape drives, and diskette drives
- Setting and storing power-on features such as date and time
- Storing configuration information in nonvolatile memory
- Assisting in the installation of the operating system
- Assisting in running diagnostic tools such as TEST and INSPECT Utilities

The first time your server is configured, the SmartStart program automatically creates a system configuration partition and installs the System Configuration Utility and other Compaq utilities into that partition.

For information concerning this utility, refer to the SmartStart documentation and the Documentation CD shipped with your server.

Automatic Server Recovery-2 (ASR-2)

Automatic Server Recovery-2 (ASR-2) enables the server to boot automatically from either the operating system or the Compaq Utilities features. If there is a critical system failure, ASR-2 automatically restarts the server and pages a designated system administrator. For additional information on the ASR-2 feature, refer to the Documentation CD that shipped with your server.

Compaq Integrated Remote Console

The standard Compaq Integrated Remote Console (IRC) performs a wide range of configuration activities, is accessible using ANSI terminal emulation, and can operate independent of the operating system. Features of the IRC include:

- Support for remote server reboot
- Access to system configuration
- Out-of-band communication with dedicated external management modem connected to the server

For information about the standard Compaq Integrated Remote Console, refer to the Compaq Integrated Remote Console User Guide included on the Documentation CD.

Compaq Integrated Management Log

The standard Compaq Integrated Management Log (IML) records events and stores them in an easily viewable form. The IML records hundreds of events and marks each event with a time-stamp keyed to one-minute granularity.

For information about using the Integrated Management Log, refer to Chapter 7, “Integrated Management Log,” in this guide.

Compaq Integrated Management Display (Option)

The Integrated Management Display (IMD) is an optional LCD display panel that allows you to diagnose and service the server without using a keyboard or monitor.

Features of the Integrated Management Display include:

■ **Flexibility**

The IMD rotates to support both tower and rack configurations.

■ **Manageability**

Typical service and administrative information displays include:

- ☐ Power-On Self-Test (POST) messages
- ☐ User-defined administrative information
- ☐ POST and run-time error events
- ☐ System information

■ **Ease of Use**

The IMD provides a 16 x 4-character display and a four-button control panel for easy navigation through display menus.

Compaq Remote Insight Board (PCI Option)

The Compaq Remote Insight Board PCI option is a PCI-based, single-board computer that is installed to provide remote management of a server, regardless of the state of the host operating system or the host CPU.

A built-in Intel i960 processor and battery backup allows the Remote Insight module to work independent of the host server operating system. Remote Insight provides remote access, sends alerts, and performs other functions, even if the host server operating system is not responding or if the server has lost power.

NOTE: To function properly, the Remote Insight Board must be installed in a 32-bit PCI slot (slot 1 or 2).

Security Features

Compaq ProLiant ML370 security features include:

- Power-on password
- Administrator password
- Network server mode
- QuickLock
- Diskette drive control
- Diskette write control
- Diskette boot override
- Serial interface control
- Parallel interface control
- Configuration lock
- Security lock provision

Standard security features are configured through the Compaq System Configuration Utility. For additional information about server security features, refer to the Documentation CD and the SmartStart and Support Software CD shipped with your server.

Diagnostic Tools

ProLiant ML370 software and firmware diagnostic tools include:

- Power-On Self-Test (POST)
- Diagnostics (DIAGS)
- ROMPaq utilities to upgrade flash ROMs
- Automatic Server Recovery-2 (ASR-2)

For additional information concerning Compaq diagnostic tools, refer to the Documentation CD shipped with your server.

Front Panel Components

Tower Model Server

The figure below shows front panel components of the tower model server.

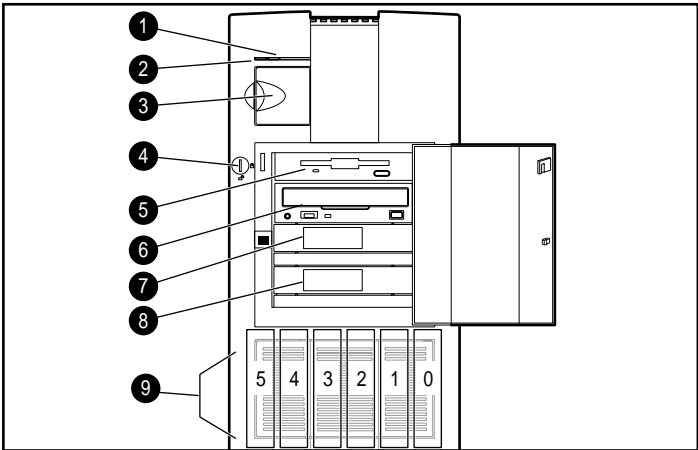


Figure 1-3. Identifying front panel components of the tower model server

Table 1-1
Front Panel Components for the Tower Model Server

Number	Component	Number	Component
❶	SCSI activity indicator	❸	CD-ROM drive
❷	Power On/Standby indicator	❹	Blank removable media bay
❸	Power On/Standby switch	❺	Blank removable media bay
❹	Keylock for front bezel	❻	Six (6) hot-plug drive bays
❺	Diskette drive		

NOTE: The type of loading mechanism on the CD-ROM drive installed with your server may differ from the one shown in illustrations.

Rack Model Server

The figure below shows the front panel components of the rack model server.

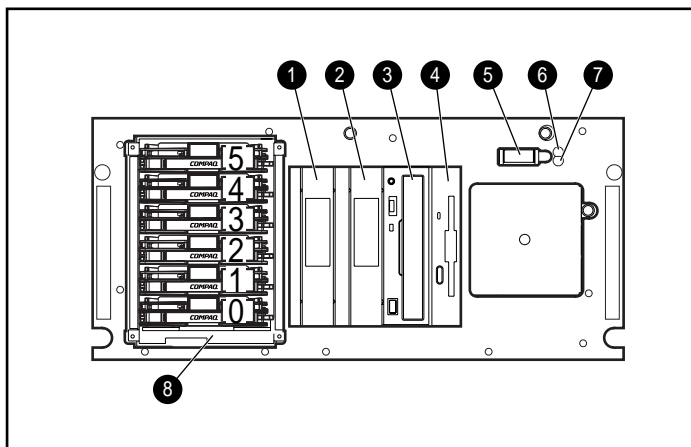


Figure 1-4 Identifying front panel components of the rack model server

Table 1-2
Front Panel Components for the Rack Model Server

Number	Component	Number	Component
①	Blank removable media bay	⑤	Power On/Standby switch
②	Blank removable media bay	⑥	Power On/Standby indicator
③	CD-ROM drive	⑦	SCSI activity indicator
④	Diskette drive	⑧	Six (6) hot-plug drive bays

NOTE: The type of loading mechanism on the CD-ROM drive installed with your server may differ from the one shown in the illustration above.

Rear Panel Components

Tower Model

The figure below shows rear panel components of the tower model.

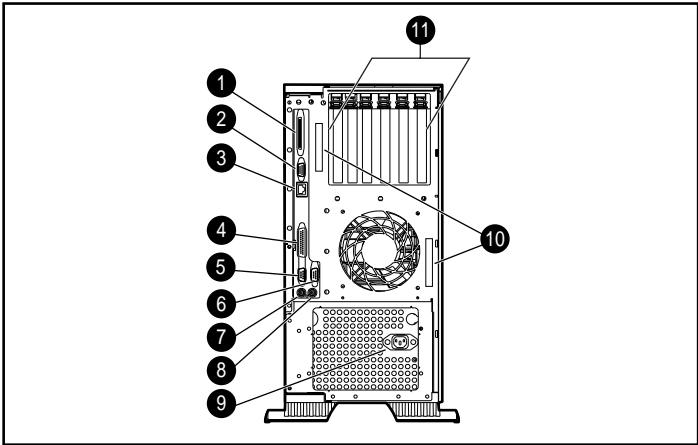


Figure 1-5. Identifying rear panel components of the tower model server

Table 1-3
Rear Panel Components for the Tower Model

Number	Component	Number	Component
1	External SCSI connector	7	Hot-plug keyboard connector (purple)
2	Video connector (blue)	8	Mouse connector (green)
3	RJ-45 network connector	9	External power connector
4	Parallel connector (burgundy)	10	Expansion slots
5	Serial connector A (teal)	11	External SCSI access
6	Serial connector B (teal)		

Rack Model

The figure below shows rear panel components of the rack model server.

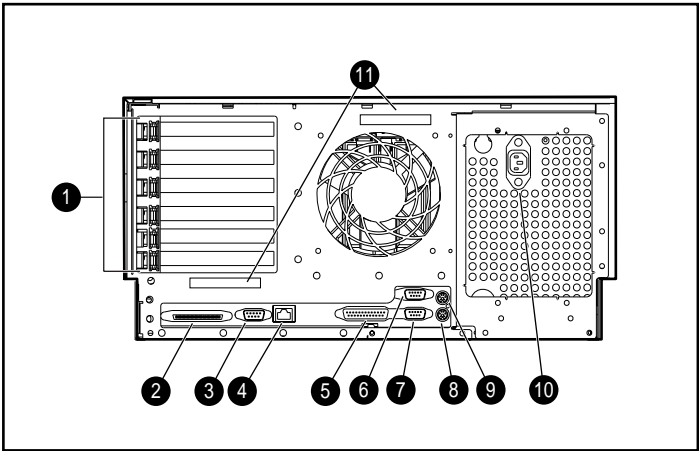


Figure 1-6. Identifying rear panel components of the rack model server

Table 1-4
Rear Panel Components for the Rack Model Server

Number	Component	Number	Component
1	Expansion slots	7	Serial connector A (teal)
2	External SCSI connector	8	Hot-plug keyboard connector (purple)
3	Video connector (blue)	9	Mouse connector (green)
4	RJ-45 network connector	10	External power connector
5	Parallel connector (burgundy)	11	External SCSI access
6	Serial connector B (teal)		

Network Controller

The network interface for ProLiant ML370 server is supported by an RJ-45 connector on the rear panel of the server. The connector features two LED activity indicators located on either side of the tab-lock slot. The LED indicator on the left ❶ turns green to indicate network activity. The LED indicator on the right ❷ turns green while the server is connected to the network.

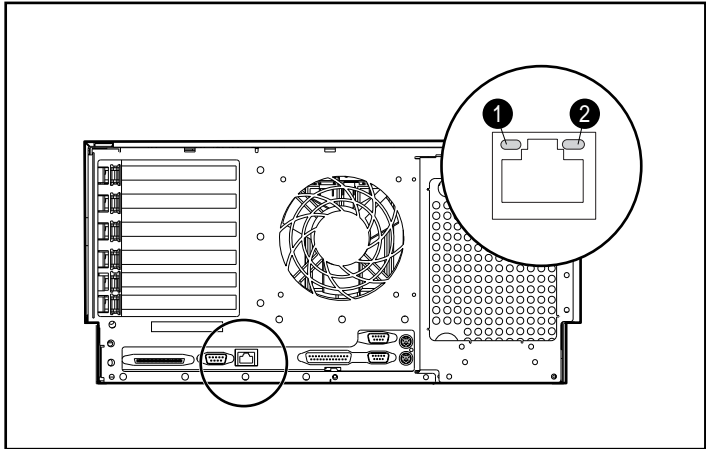


Figure 1-7. RJ-45 connector with LED indicators

Table 1-5
LED Indicators for the RJ-45 Connector

Number	Indicator
❶	NIC activity indicator
❷	NIC link status indicator

System Board Components

The figure below shows the system board components on ProLiant ML370 servers. The table on the following page provides a list for the location of each component.

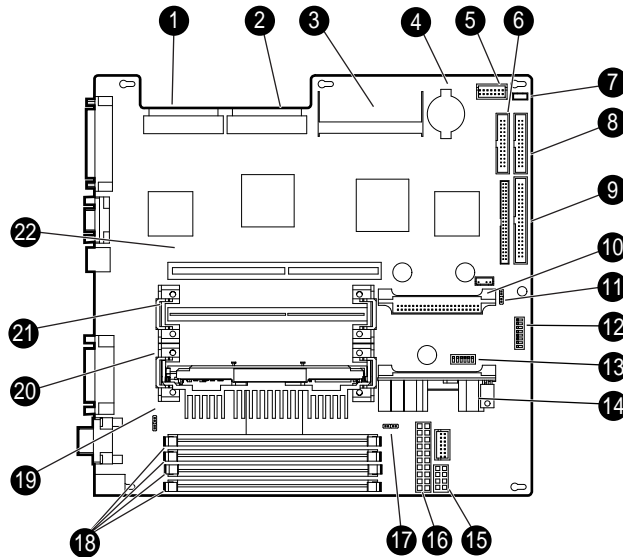


Figure 1-8. System board components

NOTE: Heat sink and processor mounting hardware may appear different than illustrated in this guide.

Table 1-6
System Board Components

Number	Component	Number	Component
❶	SCSI port 1	❷	Processor configuration switch—RESERVED
❸	SCSI port 2	❹	System configuration switch
❺	Integrated Smart Array Controller slot	❻	Processor Power Module (PPM) slot 1 (populated)
❼	Battery	❼❶	Power supply connectors
❽	Power switch connector	❽	Power supply signal header
❾	LCD connector	❾	DIMM sockets
❿	Virtual power button connector	❿	Processor fan header
⓫	Diskette drive connector	⓫	Processor slot 1 (populated)
⓬	CD-ROM connector	⓬	Processor slot 2
⓭	Processor Power Module (PPM) slot 2	⓭	Riser board slot
⓮	Slot fan header		

Note: Your server is configured for the appropriate processor settings at the factory. The system board automatically detects and reconfigures the processor switch settings when you remove, install, or add a processor.

Installing the Tower Model ProLiant ML370

The following instructions are provided only as an overview for the first-time installation of your server. If you have any problems, contact your Compaq authorized reseller.

Installation Sequence

The following sequence should be performed when installing your server for the first time.

1. Select a site and unpack the server, keyboard, mouse, and monitor.

NOTE: The monitor is not supplied with your server.

2. Install other options, including additional memory, hard drives, expansion boards, the Integrated Smart Array Controller upgrade, or external storage devices.
3. Install PCI expansion board options. Refer to your option kits for detailed instructions.
 - a. Refer to Chapter 4, “Installing Hardware Options,” for installation guidelines, and see specific option kits for detailed instructions.

- b. Run the System Configuration utility after you install any hardware option, with the exception of additional memory and most PCI boards. The Compaq System Configuration utility, located on the SmartStart and Support Software CD, is run during the SmartStart portion of the installation sequence. Refer to the Server Setup and Management pack shipped with your server for additional instructions.
4. Set the switches for the system board and SCSI IDs, if changes are required. Refer to Chapter 4, "Installing Hardware Options," for additional instructions.
5. Connect the cables for the keyboard, mouse, monitor, network, and power.
6. Turn on the computer and insert the SmartStart and Support Software CD to configure the server. When the server starts from the SmartStart program, it automatically initiates the System Configuration Utility. For SmartStart and Support Software CD initialization procedures, refer to the Server Setup and Management pack shipped with your server.
7. Install the Compaq Insight Manager server management functions. For Compaq Management CD initialization procedures, refer to the Server Setup and Management pack shipped with your server.
8. Register your server. For server registration information, refer to the Server Setup and Management pack shipped with your server or visit the Compaq website:

<http://www.compaq.com>

NOTE: After the SmartStart system configuration utility program is installed, you are prompted to turn the server off and start the server again from the SmartStart program.

Selecting a Site

Make sure that the installation site you select has the following features:

- A sturdy, level installation site that includes dedicated and properly grounded circuits, air conditioning, and static electricity protection
- 3-inch (7.6-cm) clearance at the front and back of the server for proper ventilation
- A separate electrical circuit for the server



WARNING: This equipment is designed for connection to a grounded AC outlet. The grounding type plug is an important safety feature. To reduce risk of electrical shock or damage to your equipment, do not disable this feature.



CAUTION: Ensure that you place the equipment sufficiently close to the power outlet. When you need to disconnect power from the equipment, be sure to unplug the power cord from the power outlet.



CAUTION: Use a regulating uninterruptible power supply (UPS) to protect the server from power fluctuations and temporary interruptions. This device protects the hardware from damage caused by power surges and voltage spikes, and it keeps the system in operation during a power failure.

Unpacking

Unpack the server, keyboard, and cables according to the instructions and illustrations printed on the shipping cartons.

Locating Materials

Locate the following materials that were shipped with your server:

- Compaq ProLiant ML370 server
- Keyboard
- Mouse
- Power cord
- Documentation resources including installation instructions for hardware options that are printed on the labels attached to the large and small access panels.
- Documentation CD and software shipped with your server including Server Setup and Management, Reference Information, and Software Products

In addition to these supplied materials, you may need the following items:

- T-15 Torx screwdriver
- Options to be installed such as expansion boards, monitors, uninterruptible power supply (UPS), memory, or Integrated Smart Array Controller
- Application software diskettes
- Operating system and application software

Installing Expansion Boards and Other Major Hardware Options

See Chapter 4, “Installing Hardware Options,” for instructions on installing PCI expansion boards and other major hardware options.

The following major hardware options are available for the ProLiant ML370 server and may be obtained from your local Compaq authorized reseller:

- Hot-plug hard drives
- Memory
- Additional processor and Processor Power Module (PPM)
- SCSI controller boards
- Tower-to-rack conversion kit
- Tape drives
- Integrated Management Display
- Remote Insight Board (PCI)
- Hot-plug redundant power supply
- Integrated Smart Array Controller upgrade



CAUTION: Remove the AC power cord from the server before installing options such as PCI expansion boards. Installing expansion boards with the AC power cord connected to the server may result in damage to the system.

This guide covers only the installation of a typical expansion board, hard drive, memory, SCSI devices, integrated controller, and a second processor.

Connecting the Power Cord and Peripheral Devices

After all internal hardware options have been installed in the server, connect the power cord and peripheral devices to the connectors located on the rear panel of the server. Locations of connectors for the power cord and peripheral devices on the rear panel of the server are shown in the figure below. See Chapter 4, “Installing Hardware Options,” or see the options kits for detailed instructions for connecting peripheral devices.

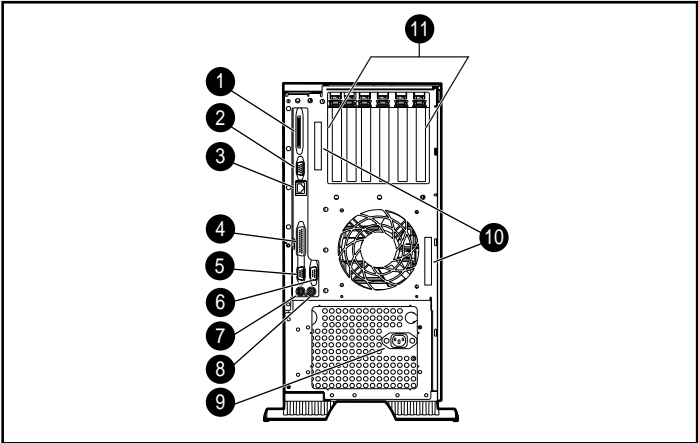


Figure 2-1. Rear panel of the tower server

Table 2-1
Rear Panel Connectors on the Tower Server

Number	Connector	Number	Connector
1	External SCSI connector	7	Hot-plug keyboard connector (purple)
2	Video connector (blue)	8	Mouse connector (green)
3	RJ-45 network connector	9	External power connector
4	Parallel connector (burgundy)	10	Expansion slots
5	Serial connector A (teal)	11	External SCSI access
6	Serial connector B (teal)		

Power Cords

If no power cord was provided with your server, purchase and use a power cord that is approved for use in the country in which the server is to be used.

The power cord must be rated for the product and for the voltage and current marked on the product's electrical ratings label. The voltage and current rating of the cord should be greater than the voltage and current rating marked on the product. In addition, the diameter of the wire must be a minimum of 1.00 mm², or 18AWG, and the length of the cord must be between 6 feet (1.8 m) and 12 feet (3.6 m). If you have questions about the type of power cord to use, contact your Compaq authorized service provider.

Power cords must be located out of the way of traffic and away from areas where other objects may be placed upon or against the cord. Particular attention should be paid to the plug, electrical outlet, and the point where the cord exits from the product.

Powering Up the Server

After the cables have been connected to the server, you are ready to power up the server.



WARNING: To reduce the risk of electric shock or damage to the equipment:

- Do not disable the power cord grounding plug. The grounding plug is an important safety feature.
 - Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.
 - Unplug the power cord from each power supply to disconnect power to the equipment.
-

NOTE: Do not place anything on power cords or cables. Arrange cords so that no one may accidentally step or trip over them. Do not pull on a cord or cable. When unplugging from the electrical outlet, grasp the cord by the plug housing.

1. Slide the power switch cover plate ❶ away from the power switch.
2. Press the power switch ❷ to turn on the server.

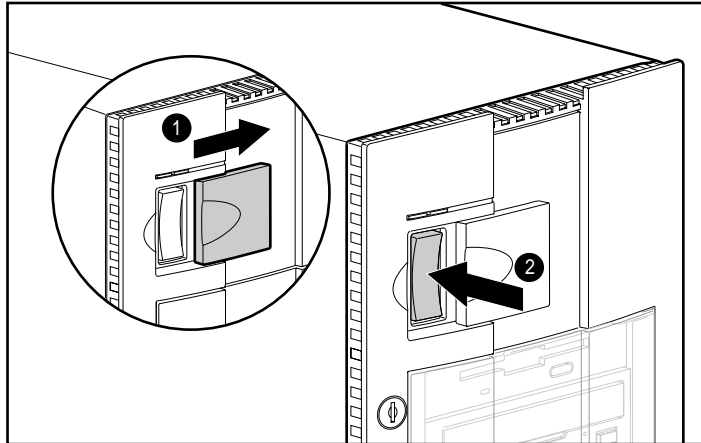


Figure 2-2. Turning on power to the server

Configuring the Server with SmartStart

SmartStart is the intelligent way to configure the server and to load system software, thereby achieving a well-integrated server and ensuring maximum dependability and supportability. The SmartStart and Support Software CD contains the Compaq System Configuration Utility and ROMPaq. To use the SmartStart and Support Software CD, refer to the Server Setup and Management pack shipped with your server.

The Compaq System Configuration utility performs a wide range of configuration activities including:

- Configuring PCI boards automatically
- Providing switch and jumper settings
- Resolving resource conflicts in memory, port addresses, and interrupts
- Managing the installation of memory, processor upgrades, array controllers, and mass storage devices such as hard drives, tape drives, and diskette drives
- Setting and storing Power-On features such as date and time
- Storing configuration information in nonvolatile memory

- Assisting in the installation of the operating system
- Assisting in the running of diagnostic tools such as the TEST and INSPECT utilities

The first time the server is configured, the SmartStart program automatically creates a system partition and installs the configuration utility and other Compaq utilities into that partition.

Install the SmartStart and Support Software CD:

1. With your computer turned on, open the removable media access door by pressing on the left side of the door ❶ as shown below. Swing the door open ❷ to access the CD-ROM drive.

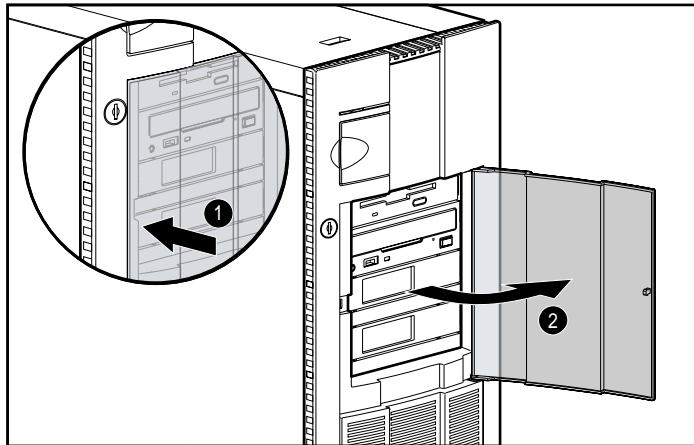


Figure 2-3. Opening the removable media access door

2. Locate the SmartStart and Support Software CD in the Server Setup and Management pack.
3. Insert the SmartStart and Support Software CD into the CD-ROM drive.

NOTE: Handle the CD by its edges rather than by the flat surfaces of the disk.

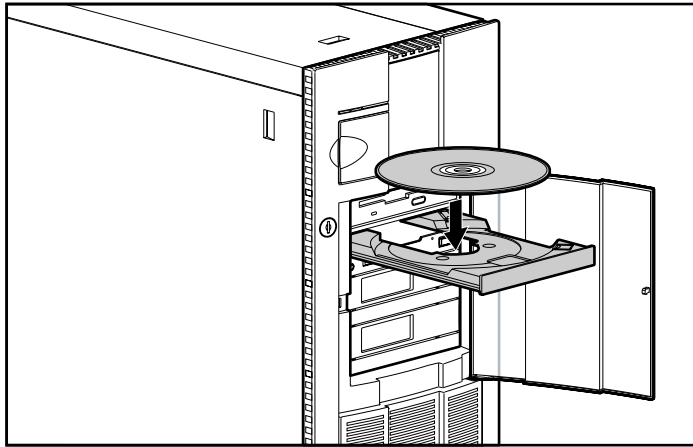


Figure 2-4. Inserting the CD into the CD-ROM drive

4. After running the Power-On Self-Test (POST) utility, the system automatically starts from the CD-ROM and begins the SmartStart installation. Refer to the SmartStart documentation included in the Server Setup and Management pack for instructions on configuring the system and loading the operating system.

To manage the system, refer to the Compaq Management CD provided in the Server Setup and Management pack shipped with your server.

Using Diagnostic Tools

Software and firmware diagnostic tools are available:

- Power-On Self-Test (POST)
- Diagnostics (DIAGS)
- ROMPaq utilities to upgrade flash ROMs
- Automatic Server Recovery (ASR-2)

For information concerning Compaq diagnostic tools, refer to the Documentation CD shipped with your server.

Registering Your Server

Refer to the Server Setup and Management pack shipped with your server for registration information. You may also register your server online when you visit the Compaq website:

<http://www.compaq.com>

Routine Maintenance

For information concerning routine maintenance and safety precautions, refer to the Documentation CD shipped with your server.

Chapter **3**

Installing the Rack Model ProLiant ML370

This chapter provides information and instructions for installing your new Compaq ProLiant ML370 rack server. The installation sequence includes:

- Attaching the mounting hardware to the server and to the rack
- Installing the server into the rack
- Managing server cabling
- Accessing the internal components of the rack-mounted server

You may choose the optional installation service from Compaq to set up your rack products. Refer to the “Optional Installation Service” section at the end of this chapter for additional information.

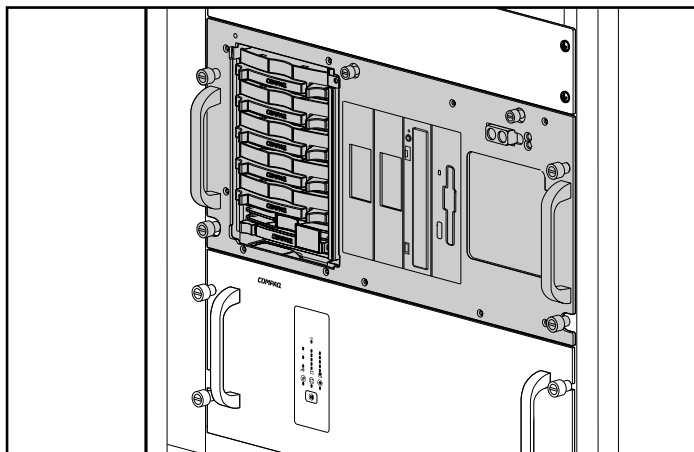


Figure 3-1 ProLiant ML370 server installed in the rack

Complete rack mounting instructions are available on the Documentation CD shipped with your server. In addition, the Rack Builder Configuration and Rack Information Library information can be found on the Compaq website:

<http://www.compaq.com>

The entire Rack Resource CD Kit, part number 298721-001, ships with all Compaq server racks. Contents for each CD include:

■ **Rack Builder Pro Configuration Tool**

This information allows you to simulate potential Compaq rack configurations based on your input. The rack builder tool provides:

- ☐ Graphical preview of properly configured racks
- ☐ Site planning data, power requirements, cooling mandates, and physical specifications
- ☐ Ordering information, required components, part numbers, and appropriate quantities

■ **Installing Rack Products**

This information gives a visual overview of operations required to configure a Compaq rack with rack-mountable components. The video covers key configuration steps including:

- ☐ Site planning
- ☐ Installing rack servers and rack options
- ☐ Cabling
- ☐ Coupling multiple racks together

■ Rack Information Library

This information allows you to view, search, and print documentation for Compaq racks and rack options. The information helps you to set up and optimize your new Compaq rack to best fit the needs of your environment.

Rack Warnings and Precautions

Before beginning installation procedures, make sure that you understand the following warnings and cautions:



WARNING: To reduce the risk of personal injury, always ensure that the rack is adequately stabilized before extending a component outside the rack. A rack may become unstable if more than one component is extended for any reason. Extend only one component at a time.



WARNING: To reduce the risk of personal injury or damage to the equipment, be sure that:

- The leveling jacks are extended to the floor
 - The full weight of the rack rests on the leveling jacks
 - The stabilizers are attached to the rack if it is a single rack installation
 - The racks are coupled together in multiple rack installations
-



WARNING: To reduce the risk of personal injury or damage to the equipment, at least two people are needed to safely unload the rack from the pallet. An empty 42U rack weighs 253 lb (115 kg), is over seven ft (2.1m) tall, and may become unstable when being moved on its casters. Do not stand in front of the rack as it rolls down the ramp from the pallet, but handle it from the sides.



WARNING: A rack may become unstable if more than one component is extended for any reason. To reduce the risk of personal injury, always ensure that the rack is adequately stabilized before extending a component outside the rack, and extend only one component at a time.



WARNING: Before beginning to work on the rack, be sure that the leveling jacks are extended to the floor, that the full weight of the rack rests on the level floor, and that either stabilizers are installed or that multiple racks are coupled together for stability.

Server Warnings and Precautions



22.6 kg
50 lb

WARNING: This product is very heavy. To reduce the risk of personal injury or damage to the equipment:

- Remove all pluggable power supplies and modules to reduce the weight of the product before lifting it.
- Observe local occupational health and safety requirements and guidelines for manual material handling.
- Get help to lift and stabilize the product during installation or removal, especially when the product is not fastened to the rails.
- Use caution when installing the product in or removing the product from the rack; the product will be unstable when not fastened to the rails.



WARNING: To reduce the risk of personal injury from hot surfaces, allow the hot-plug drives and the internal system components to cool before touching any equipment surface.



WARNING: To reduce the risk of electric shock or damage to the equipment:

- Do not disable the power cord grounding plug. The grounding plug is an important safety feature.
- Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.
- Unplug the power cord from each power supply to disconnect power to the equipment.



CAUTION: Protect the server from power fluctuations and temporary interruptions with a regulating uninterruptible power supply (UPS). This device protects the hardware from damage caused by power surges and voltage spikes and keeps the system in operation during a power failure.



CAUTION: The rack server must always be operated with the system unit cover on. Proper cooling will not be achieved if the system unit cover is removed.

The Optimum Environment

When installing your Compaq ProLiant ML370 server in a rack, certain power requirements must be met.

Power Requirements



WARNING: To reduce the risk of personal injury, fire, or damage to the equipment, do not overload the AC supply branch circuit that provides power to the rack. Consult the electrical authority having jurisdiction over your facility wiring and installation requirements.

- The power load needs to be balanced between available AC supply branch circuits.
- The overall system AC current load must not exceed 80 percent of the branch circuit AC current rating.
- If power strips are used, the load should not exceed 80 percent of the marked electrical current rating.

The installation of this equipment shall be in accordance with local and regional electrical regulations governing the installation of Information Technology Equipment by licensed electricians. This equipment is designed to operate in installations covered by the National Electric Code (ANSI/NFPA 70, 1993) and the code for Protection of Electronic Computer/Data Processing Equipment (NFPA-75, 1992).

For electrical power ratings on options, refer to the product's rating label or the user documentation supplied with that option.

Grounding

For proper operation and safety, this equipment must be properly grounded in accordance with NFPA 70-1993, Article 250. All power distribution devices, branch wiring, and receptacles must be "Listed" grounding type devices.

When using power strips for electrical distribution, ensure that ground integrity is maintained for each connection made. Plug each component into a reliably grounded outlet.

Temperature Requirements

To ensure continued safe and reliable operation of the equipment, locate the system in a well-ventilated, climate-controlled environment.

The operating temperature inside the rack will always be higher than the room temperature and is dependent on the configuration of the equipment in your rack.



CAUTION: To reduce the risk of damage to the equipment when installing third party options:

- Ensure that the option equipment does not impede airflow to the ProLiant ML370 rack server or increase the internal rack temperature beyond the Compaq-specified maximum rating.
 - Ensure that the manufacturer's maximum recommended ambient operating temperature is not exceeded when optional equipment is installed in the rack.
-

Airflow Requirements

Compaq rack servers draw cool air in through the front door and expel warm air out through the rear. Therefore, the front door of the rack must be adequately ventilated to allow ambient room air to enter the cabinet and the rear door must be adequately ventilated to allow the warm air to escape from the cabinet. Do not block the ventilation apertures.

Blanking Panels

If not all of the vertical space in the rack is filled by components, the gaps that are left will cause a change in airflow through the rack and across the components. These gaps must be covered with blanking panels.

Installation Sequence

Begin installing your rack model server:

1. Select an appropriate site for your rack. Consult the site selection criteria for installing rack products included with your Documentation CD.

NOTE: For specific hardware and software installation guidelines, refer to the Documentation CD and other operational documents shipped with your server or with appropriate option kits.

2. Unpack the server and rack mounting hardware.

3. Install any PCI expansion boards. Refer to Chapter 4, “Installing Hardware Options,” and your options kits for detailed installation instructions.

NOTE: If your server ships with a shipping bracket in the expansion area, be sure to remove the bracket before installing a PCI board and replace the bracket after installation.

4. Install other options including additional memory, hard drives, expansion boards, Integrated Smart Array Controller upgrade, and external storage devices.

IMPORTANT: Install hardware options (with the exception of additional memory and most PCI boards) before you run the System Configuration Utility during the SmartStart portion of the installation sequence described in Step 11.

5. Set or reset the system board switches and SCSI ID settings as needed.
6. Attach the rack-mounting hardware to the rack and to the server.
7. Slide the server into the rack.
8. Attach the cable management arm to the cable management arm bracket.
9. Attach the optional cable support to the back of the rack. The cable support is needed only if you are routing cables from one side of the rack to the other.
10. Connect the cables for your keyboard, mouse, monitor, network, and power main supply.
11. Turn on the computer and insert the SmartStart and Support Software CD to configure the server. When the server powers up from the SmartStart program, it automatically starts the System Configuration Utility.
12. Install Compaq Insight Manager to manage the server.
13. Register your server. For server registration information, refer to the Server Setup and Management pack shipped with your server or register online at the Compaq website:

<http://www.compaq.com>

Unpacking the Rack Server

Unpack the server box and locate the materials and documentation necessary to install your rack server.

Locating Materials

All of the rack mounting hardware needed to install the ProLiant ML370 server in the rack is included with the rack and with the server.

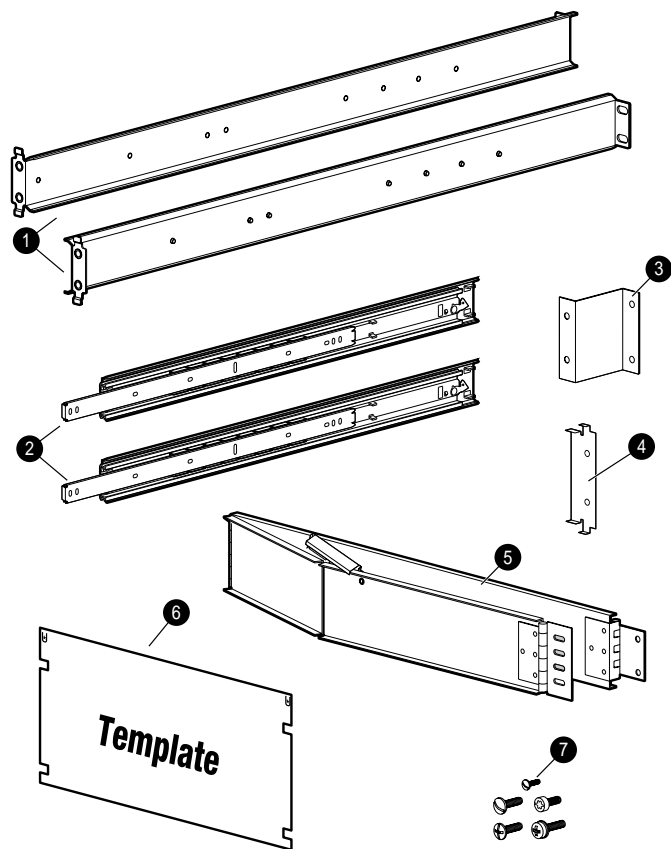


Figure 3-2. Rack mounting hardware

Table 3-1
Rack Mounting Hardware

Number	Item	Number	Item
❶	Rack-mounting brackets	❺	Cable management arm
❷	22-inch slide rail assemblies	❻	Rack mounting template
❸	Cable management arm bracket	❼	Miscellaneous screws
❹	Cable management arm rack bracket		

Contents of the rack server box include:

- Power cord
- Rack mounting hardware:
 - One pair of rack-mounting brackets
 - One pair of 22-inch slide rail assemblies
 - Cable management arm bracket
 - Cable management arm rack bracket
 - Cable management arm
 - Template that can be used to mark the rack for proper attachment of the rack mounting brackets
 - Miscellaneous screws
 - Cable support with ties
- Hardware documentation and software packs shipped with server:
 - Server Setup and Management
 - Reference Information
 - Software Products
 - Compaq Documentation CD

In addition to these supplied items, you may need:

- Phillips screwdriver
- Slotted screwdriver
- Application software diskettes
- Options kits including documentation

Installing Expansion Boards and Other Major Hardware Options

Before mounting the server in the rack, install any PCI and expansion boards. Chapter 4, “Installing Hardware Options,” provides instructions for installing these and other major hardware options.

The following major hardware options are available for the ProLiant ML370 server and may be obtained from your local Compaq authorized reseller or Compaq authorized service provider:

- Hot-plug hard drives
- Memory
- Additional processor and Processor Power Module (PPM)
- Integrated Smart Array Controller upgrade or other SCSI array controllers
- Tape drives
- Compaq Integrated Management Display (IMD)
- Remote Insight Board
- Compaq hot-plug redundant power supply
- Optional uninterruptible power supply (UPS)

This guide covers only the installation of hard drives, tape drive, memory, integrated array controller, and a second processor unit.

Preparing the Mounting Brackets and Slide Rail Assemblies

Each pair of mounting brackets, with attached slide rail assemblies, supports one rack server.

NOTE: Alignment tabs on the rack mounting brackets identify front flanges.

Each slide rail assembly consists of an outer bracket rail and an inner component rail like the ones shown below. These pieces can be separated to attach to the frame. Attach the bracket rails to the rack mounting brackets and the component rails to the sides of the server chassis.

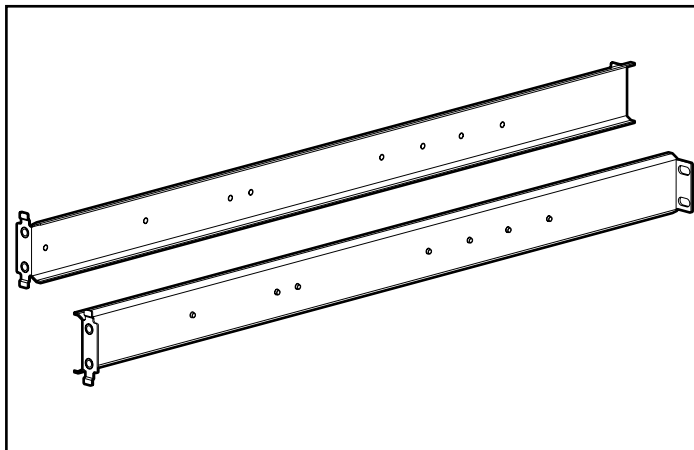


Figure 3-3. Rack mounting inner and outer brackets

NOTE: To make installation of the mounting bracket easier, attach the bracket rail to the rack mounting bracket before attaching the mounting bracket assembly to the rack. This way, the joined mounting bracket and bracket rail can be fastened to the rack as one assembly.

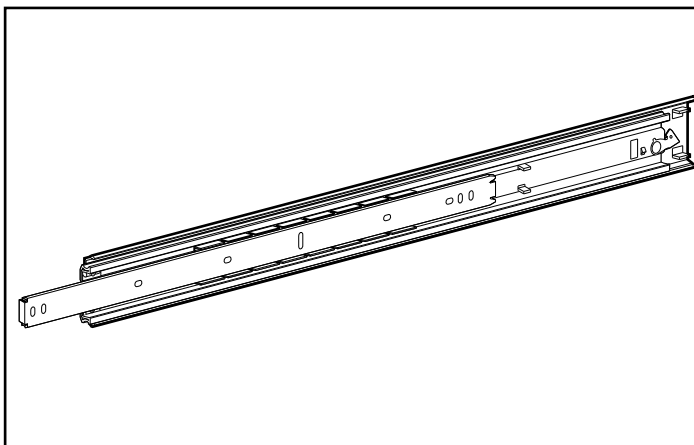


Figure 3-4. Slide rail assembly with outer bracket rail and inner component rail

Attaching the Bracket Rail to the Mounting Bracket

1. Unpack the hardware mounting kit.
2. Place the two-piece slide rail assembly (outer bracket rail and inner component rail) and fasteners on a flat surface along with the mounting brackets and fasteners that came with the rack.
3. Extend the component rail from the bracket slide rail until the release latch clicks.
4. Hold down the latch ❶ and slide the component rail ❷ out of the bracket rail.

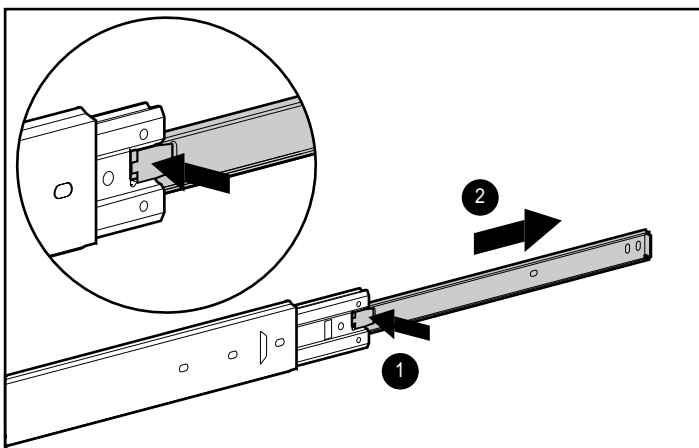


Figure 3-5. Removing the component rail from bracket rail

5. Set the component rails to one side. You will attach the rails to the rack server chassis later, as discussed in the upcoming section “Attaching Component Rails to the Server.”

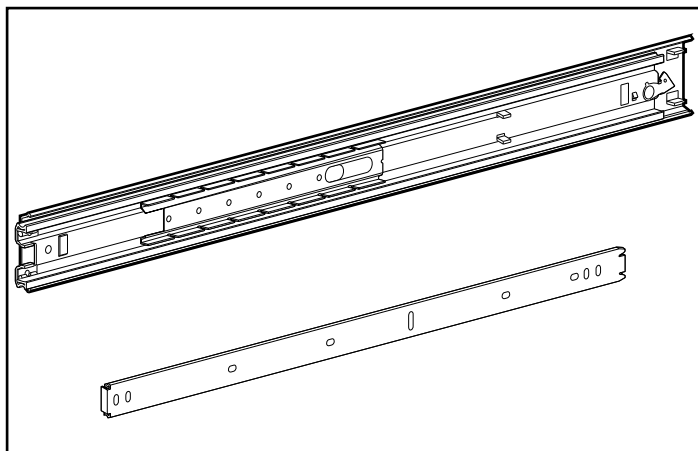


Figure 3-6. Separated bracket rail (top) and component rail

The bracket rail consists of a fixed outer rail that screws to the rack-mounting bracket, and an inner slide on a steel ball bearing movement. The inner slide does not detach from its housing.

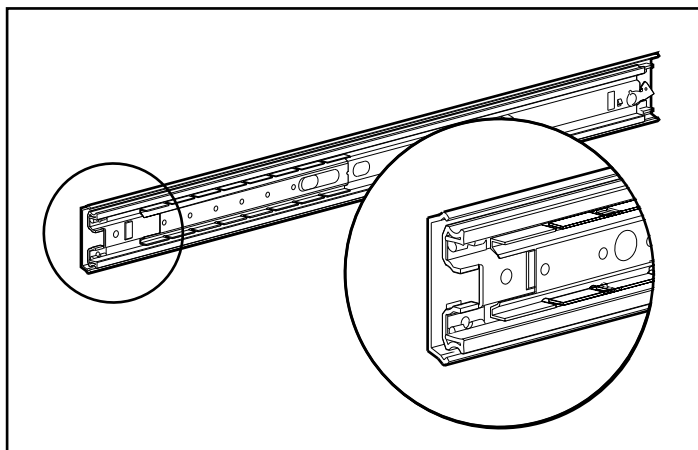


Figure 3-7. Bracket rail with inner slide

6. Set the bracket rail inside the mounting bracket with the front of both pieces oriented in the same direction. Align the front screw holes in the mounting bracket and the bracket rail as shown below.

- ❑ The front of the mounting bracket has alignment tabs on its flange.

- ❑ The front of the bracket rail allows the inner slide to move forward on ball bearings.

7. Extend the inner slide from the front of the bracket rail.

With the inner slide extended, you will see two screw holes aligned in the mounting bracket and the bracket rail. These are the two exposed holes near the back end of the bracket rail and the front hole accessible through a slot in the inner slide.

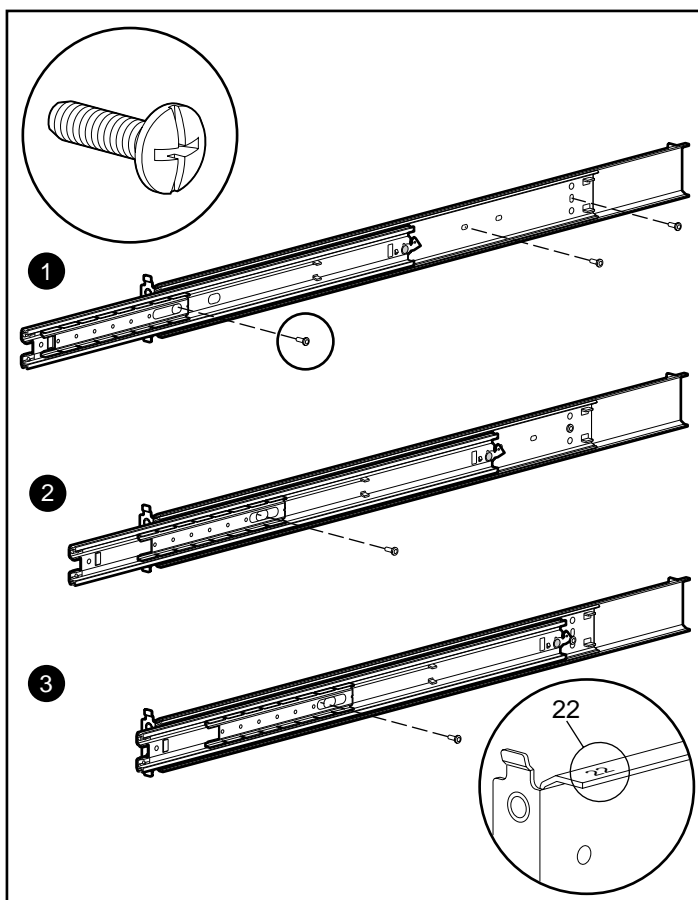


Figure 3-8. Attaching the bracket rail to the mounting bracket

8. Fasten the bracket rail to the mounting bracket ❶ with two 8-32 x 1/4-inch slotted screws.

NOTE: Do not use nuts or washers with the bracket rail screws.

9. Adjust the inner slide to line up with the other two screw holes ❷, one at a time, through the slotted opening in the inner slide. Use two more 8-32 x 1/4-inch slotted screws ❸ to fasten the bracket rail to the mounting bracket.

Use a total of five 8-32 x 1/4-inch slotted screws to fasten the bracket rail to the mounting bracket. When all five screws are fastened, the mounting brackets and bracket rail form a mounting bracket slide assembly ready to attach to the rack.

The screws line up with the 22-inch markings stamped along one edge of the mounting bracket. These marks identify the mounting holes for the 22-inch slides used in Compaq racks. The 24-inch markings stamped along the other edge are for use with the 24-inch slides that support other components.

10. Repeat Steps 5 through 8 for the other bracket rail and mounting bracket.

Attaching the Slide Assembly to the Rack



WARNING: To reduce the risk of personal injury or damage to the equipment, be sure that the leveling feet are extended to the floor and support the full weight of the rack. Each rack must be level and stable. Racks that are not coupled together require the installation of stabilizers. This **must** be done before you perform any work on the rack. See the Documentation CD for more information about installing leveling feet and stabilizers.

Applying the Template

The template provided with the server offers an easy and reliable way to position the server in the rack properly. Use the tabs on the template to suspend it from the **lower** hole of a two-hole set of perforations in the vertical side rails. Pencil-mark the attachment points for the mounting bracket assemblies, the cage nuts for the faceplate thumbscrews, and the top of the server. Use the tick marks on the rack side rails to ensure level installation of the server. Refer to other illustrations and instructions printed on the template.

IMPORTANT: Determine the server's place in the rack **before** you start installing the mounting bracket assemblies. To remind you of the proper placement of the server in the rack, refer to the rack building report you printed when you planned your rack configuration. Always mount the heaviest item on the bottom of the rack and work from the bottom to the top.

1. Starting at the bottom of the rack, or at the top of a previously mounted component, measure the screw hole locations for the server's mounting bracket assemblies.
2. Use a pencil to mark the screw hole locations on the outside of the rack. Do this on both the front and the back of the rack.

IMPORTANT: The template is two-sided (front and back) and printed with arrows that show you where the screws will be inserted, both for the mounting bracket assemblies and for the thumbscrews that will secure the server's faceplate to the front of the rack.

Align the template carefully with the holes on the rack to determine the exact placement of the screws.

3. When you mark the positioning of the mounting bracket screws, also mark the positioning in the front of the rack for the cage nuts. These are the two slots marked "C" on the template. The cage nuts will hold the thumbscrews through the server's faceplate.

Be sure to follow the alignment instructions on the template and keep the sides of the template squared up with the sides of the rack. Placing marks on the rack's vertical rails will help you maintain the proper alignment.

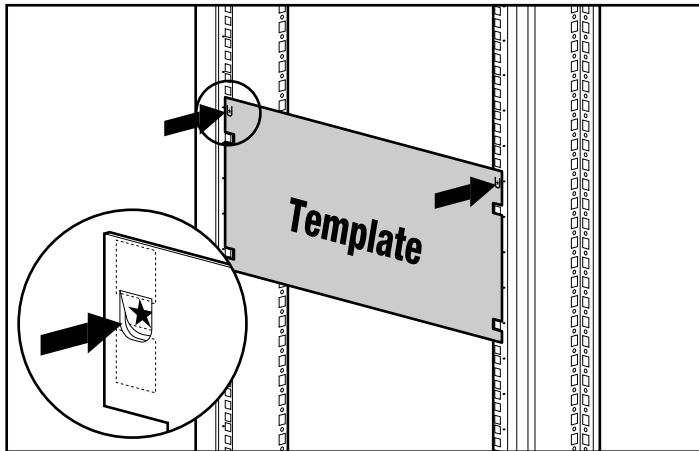


Figure 3-9. Measuring the rack with the template

4. After marking the front of the rack, open the rear door of the rack, flip the template over, and mark the back rails of the rack.
5. On the back of the rack, mark the rail to show the top of the template. This will help you align the template for the next component.

Inserting Cage Nuts into the Rack Frame

After marking the positions for the fasteners in both the front and back of the rack, use the fitting tool to insert cage nuts on the inside of the rails at the marked locations. The cage nuts and fitting tool are included in the hardware kit supplied with the rack.

1. Position the cage nut on the inside of the rail.
2. Hook one of the lips of the cage nut through the square rail perforation.
3. Insert the tip of the fitting tool through the other side of the perforation to hook the opposite lip of the cage nut.

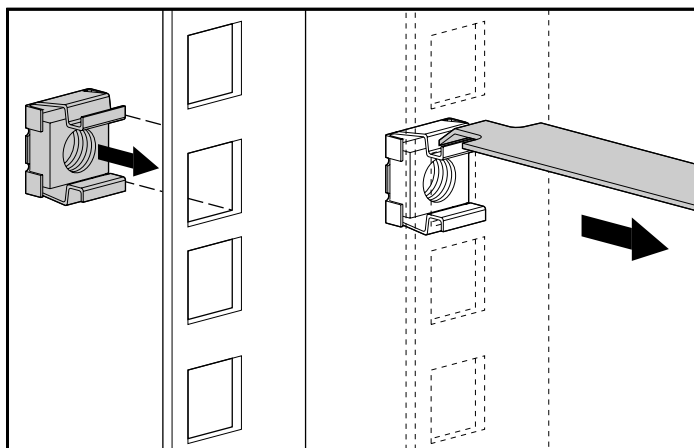


Figure 3-10. Inserting cage nuts

4. Use the fitting tool as a lever to fit the cage nut in position.
5. Repeat Steps 1 through 4 for each cage nut.

Attaching the Bracket Assembly to the Rack

The tabs on the front of the mounting bracket help to align it with the front of the rack frame. Cage nuts are not used for the front attachment of the mounting bracket.

1. Attach a mounting bracket assembly to the front of the rack, using one M6 x 1.0-12L Phillips screw in the bottom hole of the bracket.

IMPORTANT: Do not use washers with the screws in the rack assembly.

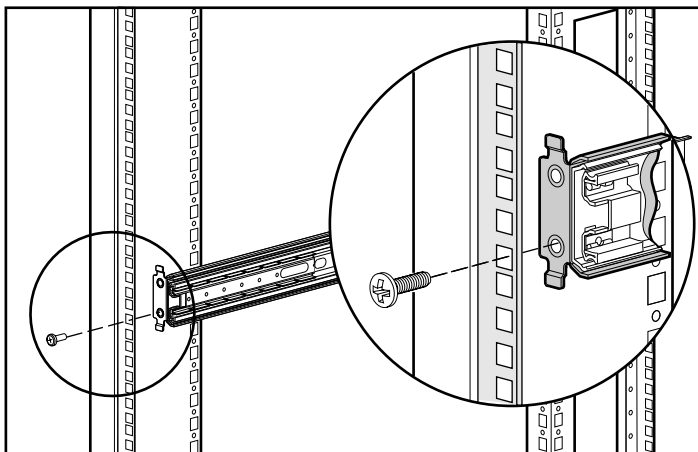


Figure 3-11. Attaching mounting bracket assembly to the front of the rack

2. Carefully align the mounting bracket assembly with the rear rack frame.
3. Secure the back end of the mounting bracket assembly to the back corner brace of the rack with one M6 x 1.0-12L Phillips screw through the bottom hole of the bracket and the cage nut.

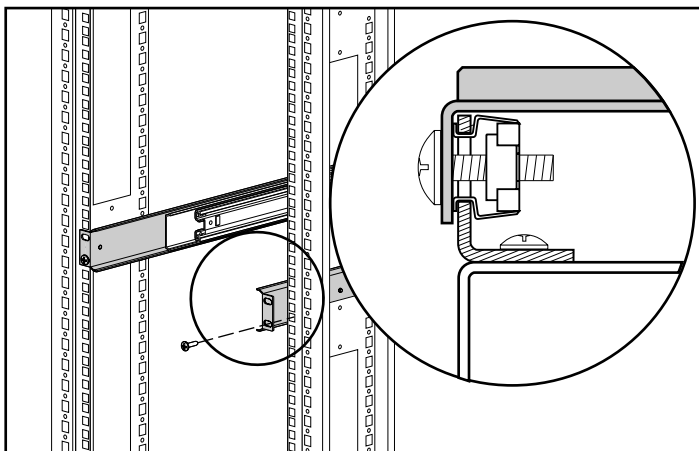


Figure 3-12. Installing the cage nut on the back of mounting bracket assembly with top view shown in inset

4. Attach both mounting bracket assemblies to the rack and prepare the server for mounting in the rack.

Attaching Component Rails to the Server

1. Place the tab on a component rail at the front of the server chassis. The holes in the component rail line up only one way with the chassis.
2. Attach the component rails, one to each side of the server chassis (flat side to chassis) with five 8-32 x 1/4-inch Phillips screws. Do not use washers with the screws.

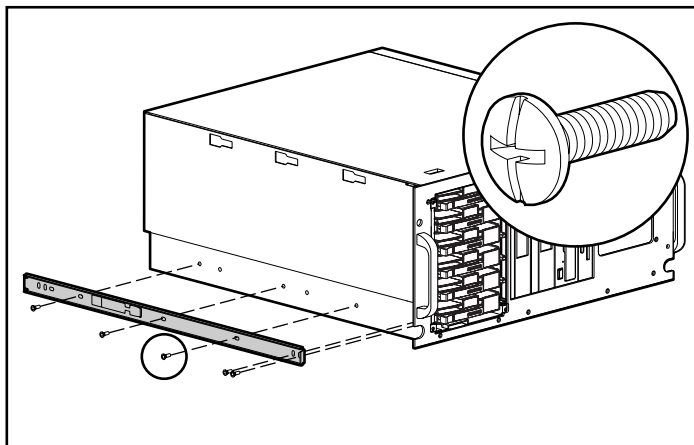


Figure 3-13. Attaching a component rail to the server

Attaching the Cable Management Arm Bracket

The cable management arm bracket fastens to the top right rear of the rack server chassis. The bracket provides an attachment point for the cable management arm from the server to the rear frame of the rack.

Attach the cable management arm bracket to the back of the server with two 6-32 x 1/4-inch Phillips screws.

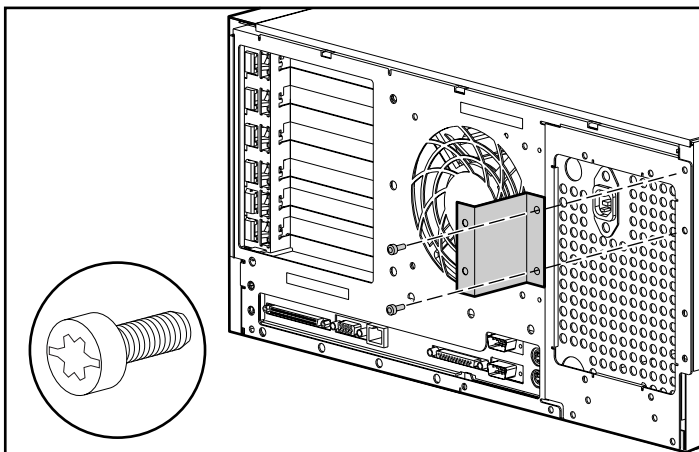


Figure 3-14. Attaching a cable management arm bracket to the server

Loading the Rack Server

When mounting multiple servers, only install one set of mounting brackets at a time. Make sure that the brackets align perfectly, the server fits in the rack, and the faceplate fits securely with thumbscrews. Then, proceed to install the next set of mounting brackets.



WARNING: To reduce the risk of personal injury or damage to the equipment, a minimum of two people **must** lift the server into the rack. The server weighs 50 pounds (22.6 kilograms). If the unit is to be loaded above chest level, a third person must assist in aligning the rails while the other two people support the unit.

IMPORTANT: To keep the server lighter and more manageable, do not install drives in the server until after you load the server into the rack.

Use the following procedure to mount and secure your server in the rack:

1. Pull the slide rails forward until they are fully extended from the mounting brackets. At full extension, the rails lock into place, as shown in the following figure.

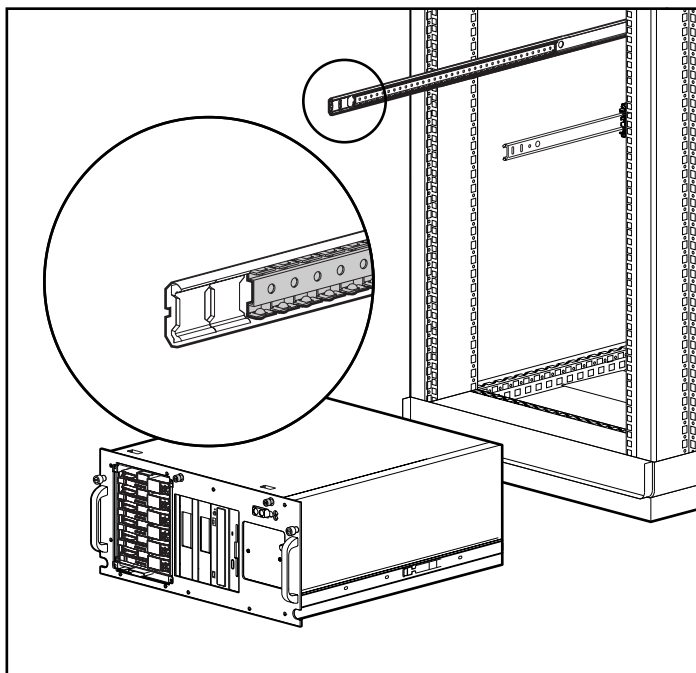


Figure 3-15. Extending the rack rails until they lock into place

2. Carefully align the server component rails with the rack slide rails, as shown in the following figure.

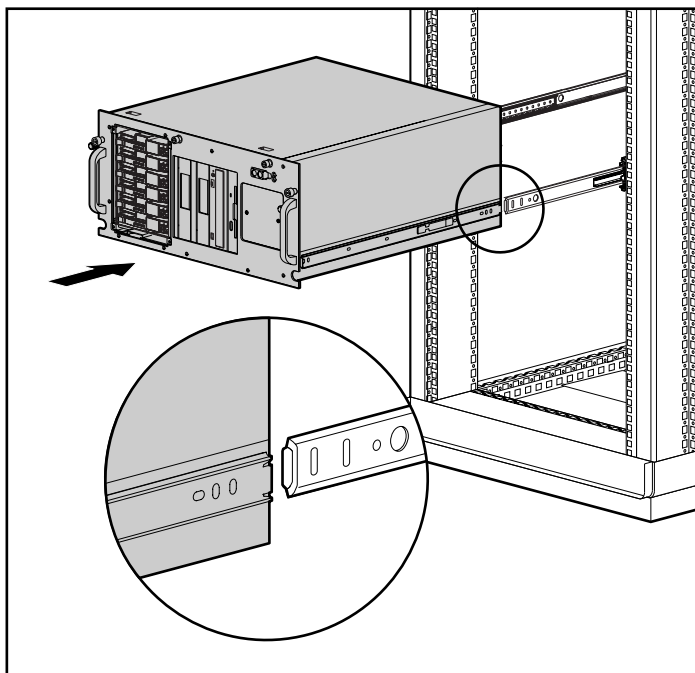


Figure 3-16. Aligning the server component rails with the rack rails

3. Ensure that the server component rails are fully engaged into the plastic guides and bearings on the rack rails on both sides, then slowly slide the server into the rack. The server slides forward until the release latches engage the rack rails.



WARNING: To reduce the risk of personal injury, be careful when pressing the component rail release latches and sliding the component into the rack. The slide rails can pinch your fingertips.



CAUTION: Be sure to keep the component parallel to the floor when sliding the component rails into the slide rails. Tilting the component up or down can cause damage to the rails.

NOTE: The first time you slide the component into the rack, you may have to apply some pressure. With continued use, the ball bearings in the slide will move easily.

4. Press the component rail release latches inward **1** on both sides of the server, and continue to slide the server into the rack.

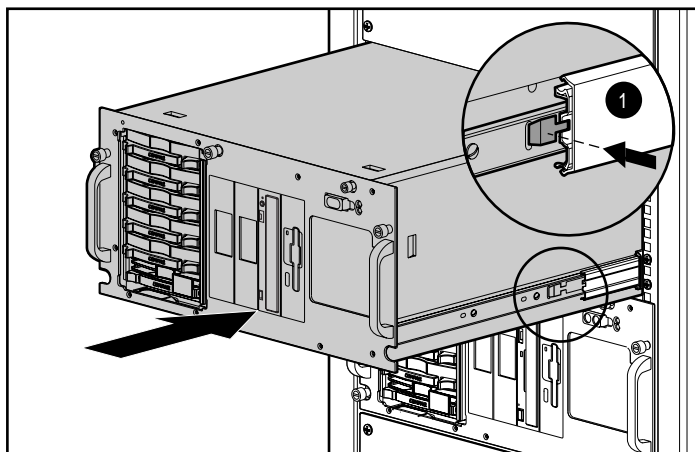


Figure 3-17. Loading the server into the rack

5. Position the server in the rack, as shown in the following figure.

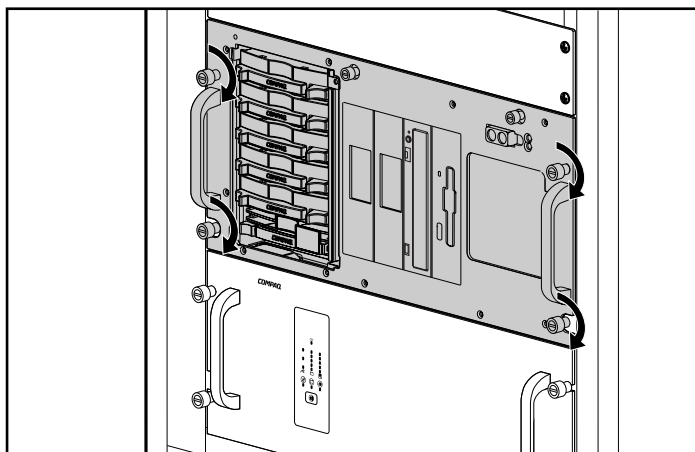


Figure 3-18. Positioning the server in the rack and securing with thumbscrews

6. Secure the server faceplate to the front of the rack by fastening the thumbscrews into the cage nuts.
7. Before closing the rack door, tighten the thumbscrews to prevent the door from hitting any protruding thumbscrews.

IMPORTANT: When servicing the server, fully extend the component until the latches lock. To return the server to the rack, press the latches and slide the server into the rack.

Attaching the Cable Management Arm

A double-hinged cable management arm and fasteners are provided with each server. The cable management arm bracket connects the server cable management arm and the rear frame of the rack. All cables to and from the server are tied to this arm. The two hinges allow the cable management arm and attached cables to swing out of the way when you need to access the back of the server.

1. For easier handling, first slide the server into the rack and attach the cable management arm to the cable management arm bracket.

NOTE: If you attach the arm before loading the server in the rack, the arm may swing around and interfere with the loading process.

2. After you have loaded the server into the rack, use two M6 x 1.0-12L Phillips screws to attach one end of the cable management arm to the server's cable management arm bracket.
3. Align the arm with the bracket as shown in the figure below.

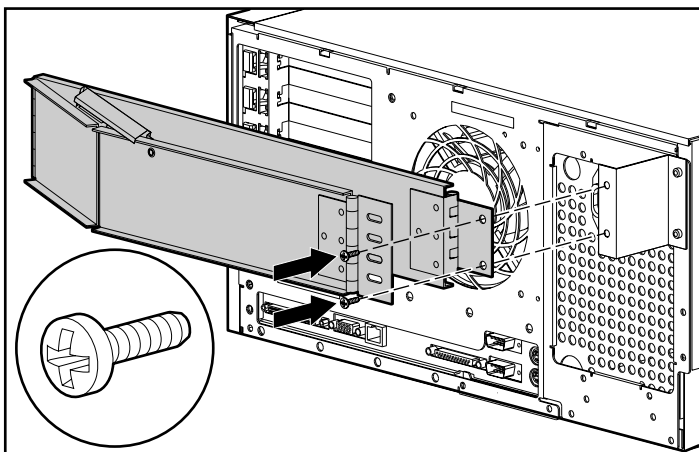


Figure 3-19. Attaching the cable management arm to the cable management arm bracket

4. Align the other end of the cable management arm on the outside of the rear brace of the rack.

5. Align the screw-retaining plate on the inside of the rack.
6. Attach the cable management arm to the rack with two 10-32 x 5/8-inch Phillips washer-face, hex-head screws.

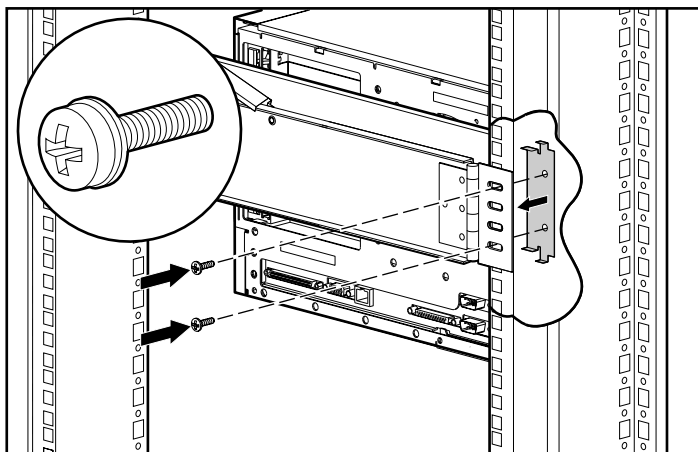


Figure 3-20. Attaching the cable management arm to the rear brace

Attaching the Cable Support

The optional cable support connects to both sides of the rear frame of the rack. All cables to and from the server are tied to this support, which allows the server cables to stretch from the right rear of the server across to the cable channel on the other side of the rack. All other cables are all bundled in the cable channel on the opposite side of the rack.

The cable support is needed only if you intend to route cables across the rack to a cable channel. Use four M6 x 1.0-12L Phillips screws to attach the cable support to both rear braces of the rack.

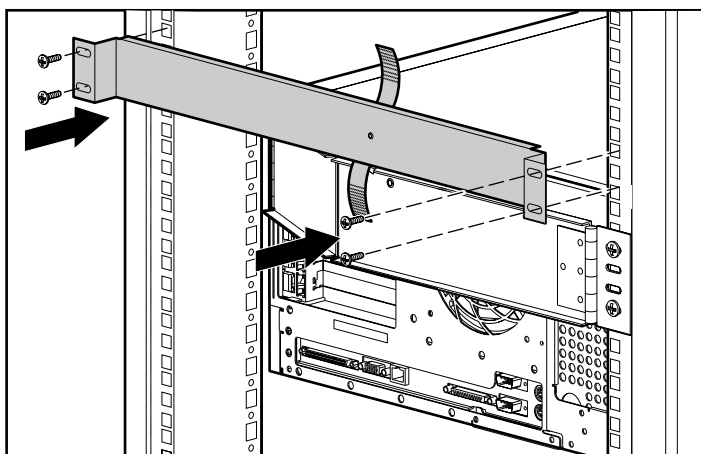


Figure 3-21. Attaching the cable support to the rack

Connecting the Power Cord and Peripheral Devices

You are now ready to connect the power cord and peripheral devices to the connectors located on the rear panel of the server. Icons on the back of the server identify the function of each connector.



WARNING: To reduce the risk of electrical shock or fire, do not plug telecommunications/telephone connectors into the NIC receptacles.

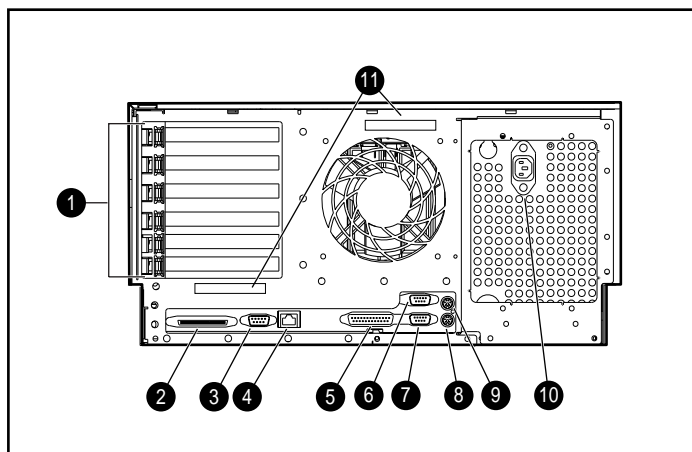


Figure 3-22. Rear panel of the ProLiant ML370 rack server

Table 3-2
Rear Panel Connectors on the ProLiant ML370 Rack Server

Number	Connector	Number	Connector
①	Expansion slots	⑦	Serial connector A (teal)
②	External SCSI connector	⑧	Hot-plug keyboard connector (purple)
③	Video connector (blue)	⑨	Mouse connector (green)
④	RJ-45 network connector	⑩	External power connector
⑤	Parallel connector (burgundy)	⑪	External SCSI access
⑥	Serial connector B (teal)		

Use the following procedure to connect the power cord and peripheral devices:

1. Plug the power cable and other peripheral cables into the server.
2. If you install a switchbox in the rack, route the CPU-to-switchbox cables to the switchbox.

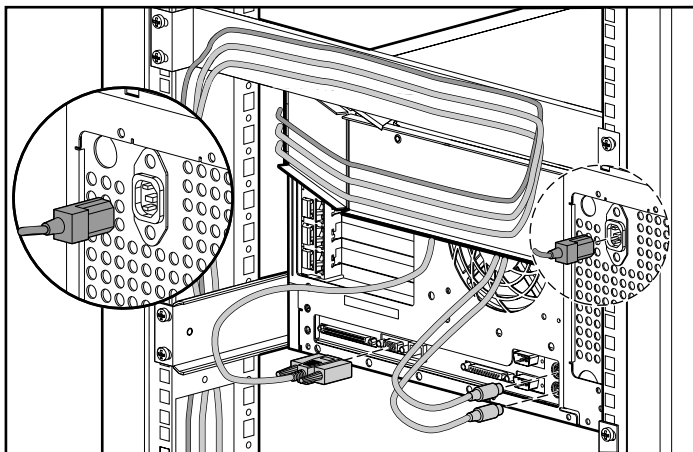


Figure 3-23. Routing cables through the cable management arm and cable support

3. Bundle all of the cables, including the power cable, together and tie them to the cable management arm.
4. To route cables to the other side of the rack, attach the bundled cables to the cable support and run them to the opposite cable channel.

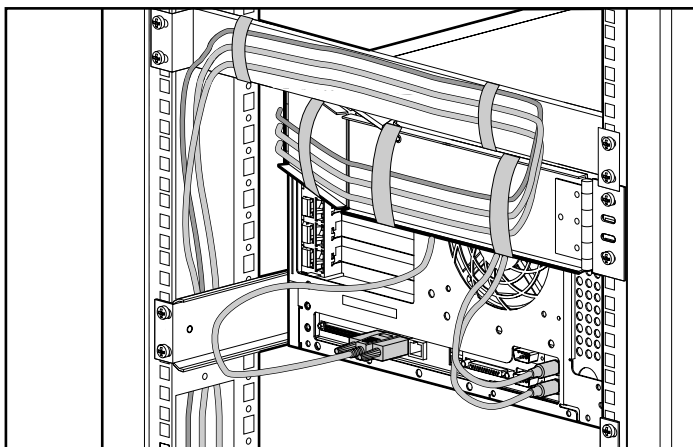


Figure 3-24. Routing and securing the cables

5. Extend the bundled cables down through the cable channel on the rack.

NOTE: Before loading a second component, be sure to secure the server to the rack with the faceplate thumbscrews.

Power Cords

The power cord set included in your server meets the requirements for use in the country where you purchased your server. If you need to use this server in another country, you should purchase a power cord that is approved for use in that country.

The power cord must be rated for the product and for the voltage and current marked on the product's electrical ratings label. The voltage and current rating of the cord should be greater than the voltage and current rating marked on the product. In addition, the diameter of the wire must be a minimum of 1.00 mm², or 18AWG, and the length of the cord must be between 6 feet (1.8 m) and 12 feet (3.6 m). If you have questions about the type of power cord to use, contact your Compaq authorized service provider.

A power cord should be routed so that it is not likely to be walked on or pinched by items placed upon it or against it. Particular attention should be paid to the plug, electrical outlet, and the point where the cord exits from the product.

Powering Up the Server

After the cables have been connected to the server, you are ready to power up the server.



WARNING: To reduce the risk of electric shock or damage to the equipment:

- Do not disable the power cord grounding plug. The grounding plug is an important safety feature.
- Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.
- Unplug the power cord from each power supply to disconnect power to the equipment.

IMPORTANT: Do not place anything on top of power cords or cables. Arrange cords so that no one will accidentally step on or trip over them. Do not tug on cords or cables. When unplugging a power cord from an electrical outlet, grasp the cord by the plug rather than by the cord.

The power switch is protected by a stationary housing attached to the chassis. Press the power switch to turn on the server.

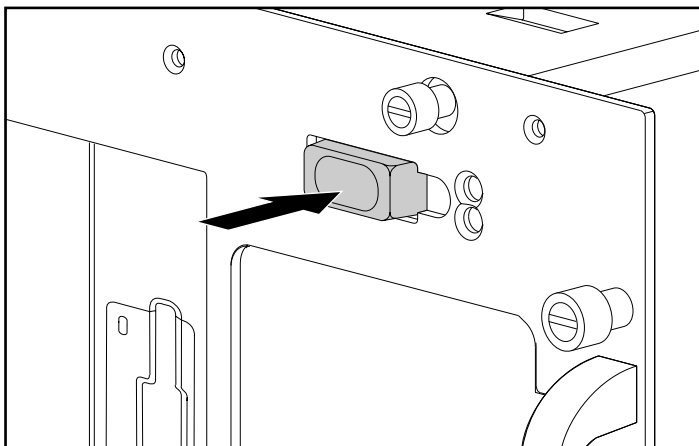


Figure 3-25. Turning on the server with the power switch

The server is now ready to be configured with the SmartStart and Support Software CD.

Configuring the Server with SmartStart

SmartStart is the intelligent way to load system software and configure the server, thereby achieving a well-integrated server and ensuring maximum dependability and supportability. The SmartStart and Support Software CD contains the Compaq System Configuration Utility and ROMPaq. Refer to the Server Setup and Management pack shipped with the server for instructions on using the SmartStart and Support Software CD.

The Compaq System Configuration utility performs a wide range of configuration activities:

- Configuring PCI boards automatically
- Providing switch and jumper settings
- Resolving resource conflicts in areas such as memory, port addresses, and interrupt settings
- Managing the installation of memory, processor upgrades, array controllers, and removable storage media including hard drives, tape drives, and diskette drives
- Setting and storing power-on features such as date and time
- Storing configuration information in nonvolatile memory
- Assisting in the installation of the operating system
- Assisting in the running of diagnostic tools such as TEST and INSPECT Utilities

The first time that the server is configured, the SmartStart program automatically creates a system configuration partition and installs the configuration utility and other Compaq utilities in that partition.

Install the SmartStart and Support Software CD:

1. Locate the SmartStart and Support Software CD in the Server Setup and Management Pack.

NOTE: Always handle the CD by its edges rather than by the flat surfaces of the disc.

2. Insert the SmartStart and Support Software CD ❶ into the CD-ROM tray, extend the four clips on the CD-ROM tray ❷ to hold the CD in place, and push lightly on the edge of the tray ❸ to close.

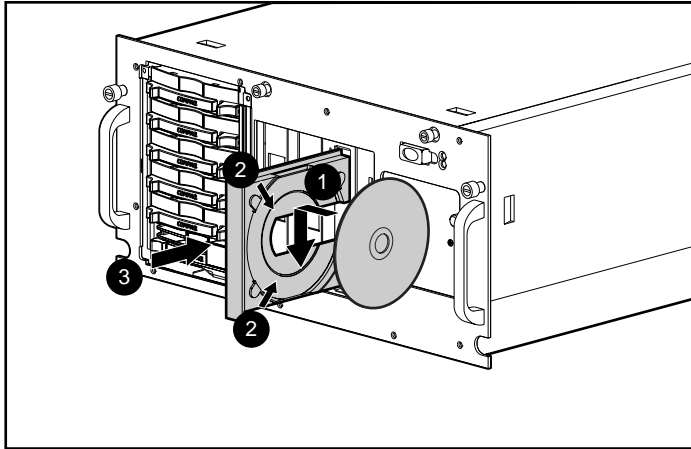


Figure 3-26. Inserting the CD into the CD-ROM drive (rack server)

NOTE: The load mechanism or tray on the CD-ROM drive installed in your server may look different from the one shown in the figure above.

3. After running Power-On Self-Test (POST), the system automatically starts from the CD and begins the SmartStart installation. Refer to the SmartStart documentation included with your Server Setup and Management pack to configure the system and load the operating system.

Refer to the Compaq Management for additional information on server management and SmartStart utilities.

Using Diagnostic Tools

ProLiant ML370 software and firmware diagnostic tools include:

- Power-On Self-Test (POST)
- Diagnostics (DIAGS)
- ROMPaq utilities to upgrade flash ROMs
- Automatic Server Recovery-2 (ASR-2)

For additional information about Compaq diagnostic tools, refer to the Documentation CD shipped with your server.

Registering Your Server

Refer to the Server Setup and Management pack shipped with your server for information on registering your server or visit the Compaq website:

<http://www.compaq.com>

Routine Maintenance

For information concerning routine maintenance and safety precautions, refer to the Documentation CD shipped with your server.

Optional Installation Service

You may choose the optional installation service offered by Compaq to install your rack products. The installation service can be customized to meet your specific requirements, or ordered as a CarePaq. The installation service covers the entire hardware installation from unpacking the components to routing the cables and running a test of the system.

Hardware installation service is available in all countries where Compaq has a direct or indirect service presence. Service may be ordered from a Compaq authorized reseller or, in North America only, call 1-800-OK-COMPAQ. In the United States, Compaq will make all of the arrangements to have the rack system installed by qualified Guaranteed Service Providers. An order form with pricing is available from PaqFax, the Compaq fax retrieval service.

Installing Hardware Options

For complete hardware option installation instructions, refer to the installation documentation that came with the option kit. For an illustrated overview of installing many Compaq option upgrades, refer to the hardware installation and configuration poster shipped with your server, or to the installation labels located on the inside of the large and small access panels. If you have any problems, contact your Compaq authorized reseller.

The new server chassis facilitates the installation of hardware upgrades. Most hardware options are installed from the system board, on the processor system board, or in the drive bay area. Use the table below to determine how to gain access to internal server components.

Table 4-1
Gaining Access to Internal Components

Component	Access
Back of drive bays	Open the front bezel* and remove the large access panel
Expansion I/O slots	Open the front bezel* and remove the small access panel
System board	Open the front bezel* and remove the large access panel

continued

Table 4-1
Gaining Access to Internal Components *continued*

Component	Access
Front of media drive bays	Open the front bezel*
Internal SCSI cables	Open the front bezel* and remove both the large and small access panel
Internal SCSI connectors (ports 1 & 2)	Open the front bezel* and remove the small access panel
Memory	Open the front bezel* and remove the large access panel
Second processor (CPU)	Open the front bezel* and remove the large access panel
Switches for processor components	Open the front bezel* and remove the large access panel

NOTE: *Procedural step not required for the rack model.



WARNING: To reduce the risk of personal injury from hot surfaces, allow the internal system components to cool before touching any surfaces.



WARNING: To reduce the risk of injury or damage to the equipment when installing options, ensure that the power to the server is turned off and that the AC power cord is disconnected.



CAUTION: Electrostatic discharge can damage electronic components. Be sure you are properly grounded before beginning any installation procedure. Refer to Appendix B, "Electrostatic Discharge," for more information.

IMPORTANT: The system power in the server does not completely shut off from the front panel Power On/Standby switch. Moving the switch from On to Standby leaves some portions of the power supply and some internal circuitry active. To remove all power from the system, you must disconnect all power cords from the server.

Differences Between the Tower and Rack Model Servers

The major difference between the Compaq ProLiant ML370 tower and rack models is the chassis configuration. The tower model can be mounted in a rack, however, with the Tower-to-Rack Conversion Option Kit. The tower model also has feet on the bottom of the server and a front bezel to cover the server chassis. In this setup and installation guide, only the tower version is shown for most of the major hardware upgrade installation procedures.

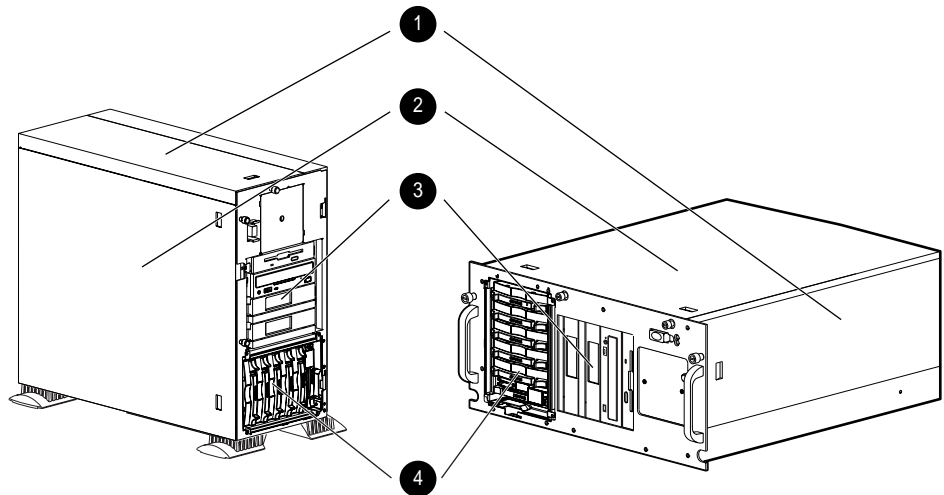


Figure 4-1. Tower model (left) with front bezel removed and rack model (right)

Table 4-2
Chassis Components

Number	Component
①	Small access panel
②	Large access panel
③	Removable media area
④	Wide Ultra2 SCSI drive cage

Opening the Front Bezel

This procedure applies only to tower models because the rack model does not have a front bezel. To open the front bezel of the tower model:

1. Turn the key lock ❶ to release, if locked.
2. Swing the front bezel (front door) open ❷.

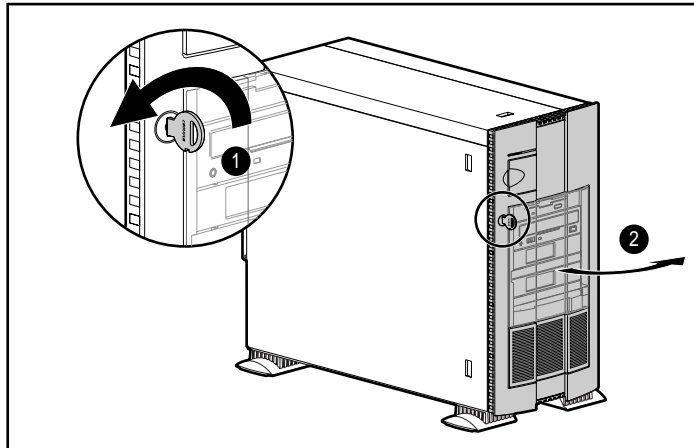


Figure 4-2. Opening the front bezel on the tower model

3. To access removable media such as CD-ROM or tape drives, swing the clear removable media door open. This door provides access to storage media without requiring you to open the entire server assembly.
 - a. Push in on the latched side of the clear removable media door ❶.
 - b. When the latch releases, swing the door open ❷.

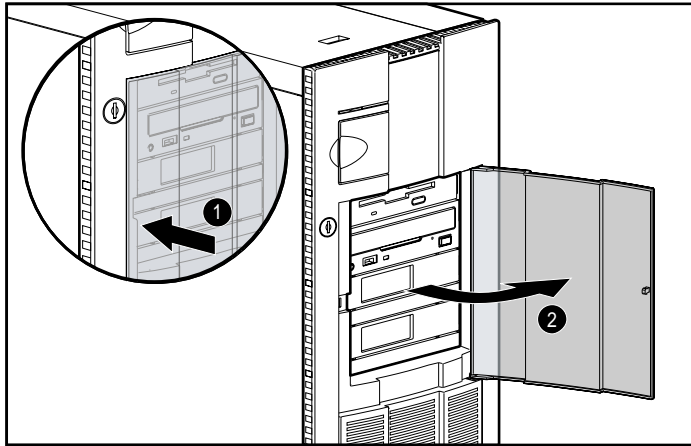


Figure 4-3. Opening the removable media access door on the tower model

Removing the Small Access Panel



CAUTION: Do not operate the server without the access panels in place. These panels are an integral part of the cooling system and removing them while the system is running may adversely affect data integrity.

Tower Model

Remove the small access panel:

1. If the computer is on, turn it off and disconnect the power cord.

IMPORTANT: The system power in the ProLiant ML370 server does not completely shut off from the front panel power On/Standby switch. Moving the switch from On to Standby leaves some portions of the power supply and some internal circuitry active. To remove all power from the system, you must disconnect all power cords from the server.

2. Disconnect any other external equipment connected to the computer.
3. Open the front bezel.

4. Loosen the top thumbscrew.
5. Slide the small access panel toward the rear of the unit about 0.5-inch (1.5 cm), and move the panel off to the side of the server.
6. Lift and remove the panel.

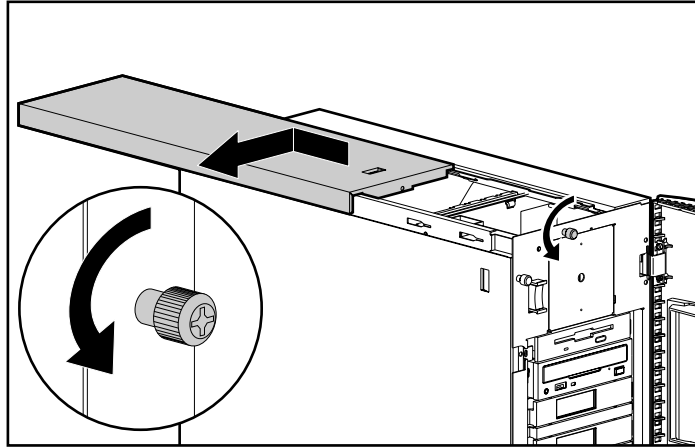


Figure 4-4. Removing the small access panel (tower server)

7. Turn the small access panel over to locate the riser board configuration label. This label provides instructions on removing expansion slot blanks and installing expansion boards.
8. Set the panel to the side and use the label to locate components inside the chassis.

Rack Model

Remove the small access panel:

1. Loosen the front panel thumbscrews ❶ to release the server from the rack as shown in the figure below.

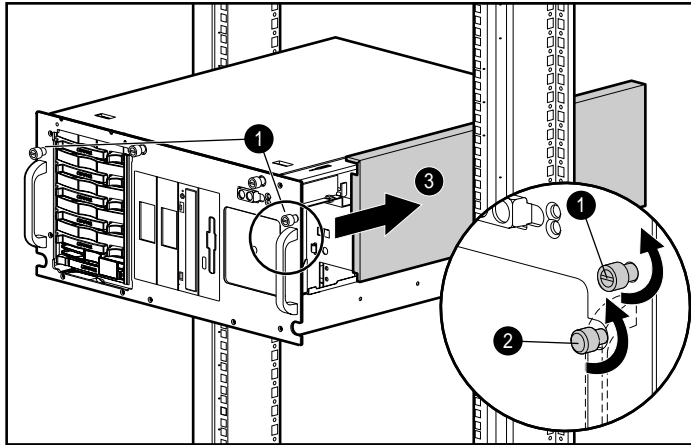


Figure 4-5. Removing the small access panel (rack server)

2. If the server is in the rack, pull the server out from the rack to the locked position.
3. Loosen the thumbscrew ❷ under the server handle to release the small access panel.
4. Slide the small access panel toward the rear of the unit about ½ inch (1.5 cm) ❸ and move the panel off to the side of the server.
5. Slide out and remove the small access panel.
6. Turn the small access panel over to locate the riser board configuration label. This label provides instructions for removing expansion slot blanks and installing the riser or other expansion boards.
7. Set the panel to the side and use the label to locate components inside the chassis.

Removing the Large Access Panel



CAUTION: Do not operate the server without the access panels in place. These panels are an integral part of the cooling system and removing them while the system is running may adversely affect data integrity.

Tower Model

Remove the large access panel:

1. If the server is on, turn it off and disconnect the power cord.
2. Disconnect any other external equipment connected to the computer.
3. Open the front bezel.
4. Loosen the thumbscrews ❶ located on the left side of the front chassis.
5. Slide the large access panel toward the rear of the unit ½ inch (1.5 cm).
6. Lift out and remove the panel ❷.

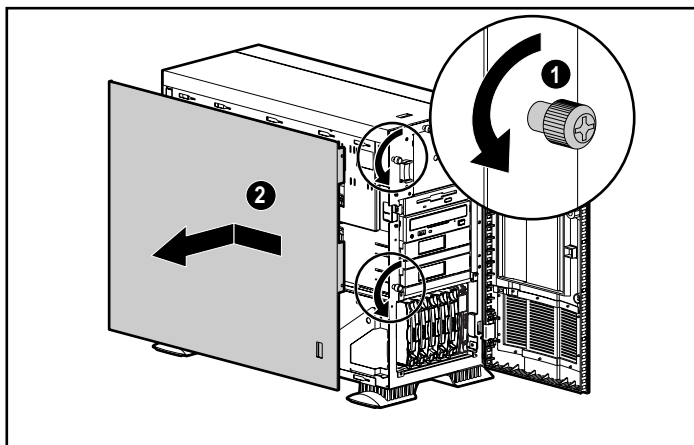


Figure 4-6. Removing the large access panel (tower server)

7. Turn the large access panel over to locate the system configuration label system board. This label provides information on installing and configuring drives, installing memory, installing additional processors, and setting switches.
8. Set the panel to the side and use the label to locate components inside the chassis.

Rack Model

Remove the large access panel:

1. If the computer is on, turn it off and disconnect the power cord.
2. Disconnect any other external equipment connected to the computer.

3. Loosen the front panel thumbscrews ❶ to release the server from the rack.
4. Pull the server out from the rack to the locked position.
5. Loosen the two thumbscrews ❷ located on the front panel of the server.
6. Slide the large access panel toward the rear of the unit 0.5 inch (1.5 cm).
7. Lift and remove the panel ❸.

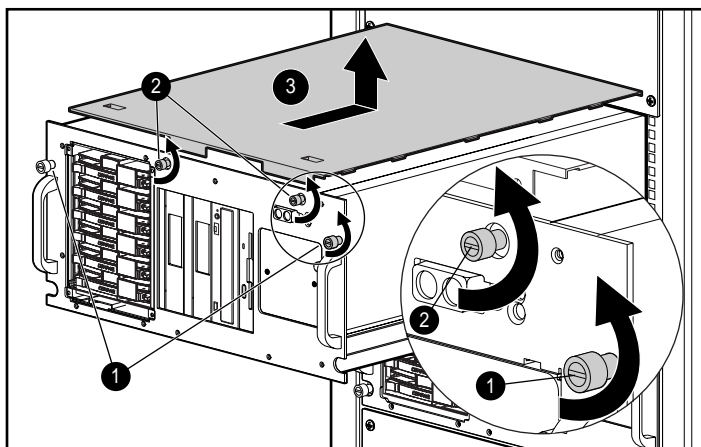


Figure 4-7. Removing the large access panel (rack server)

8. Turn the large access panel over to locate the drive configuration label. This label provides information on installing and configuring drives, installing memory, installing additional processors, and setting switches.
9. Set the panel to the side and use the label to locate components inside the chassis.

Understanding Server Security Provisions

The tower model is equipped with unique security access provisions, including one key lock for the front bezel.

To secure the tower chassis, close the front bezel **1** and turn the key lock **2** as shown in the figure below to lock the bezel.

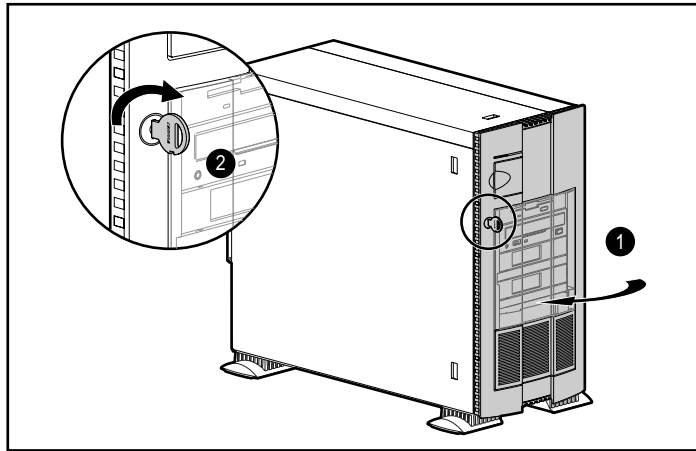


Figure 4-8. Securing the front bezel with the key lock

Locating Expansion Board Slots

The server has six PCI expansion slots located directly beneath the small access panel:

- Two 32-bit PCI slots (1 and 2)
- Four 64-bit PCI slots (3 through 6)

Expansion boards can be installed in the locations shown in the figure below.

NOTE: The rack model slot configuration is oriented differently than the tower model shown below.

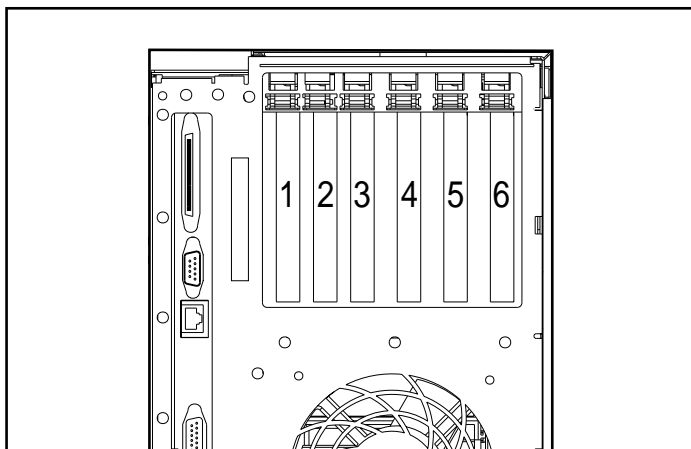


Figure 4-9. Locating expansion slots

Removing the Riser Board Shipping Bracket

Some ProLiant ML370 servers are packaged with a shipping bracket for greater stability in the area of the riser board. Before installing an expansion board, remove the shipping bracket:

1. If your server contains a riser board shipping bracket, press in on the tab ❶ on the back of the shipping bracket to release it, as shown in the illustration below.
2. Slide the bracket toward the system board and lift out, away from the assembly ❷.

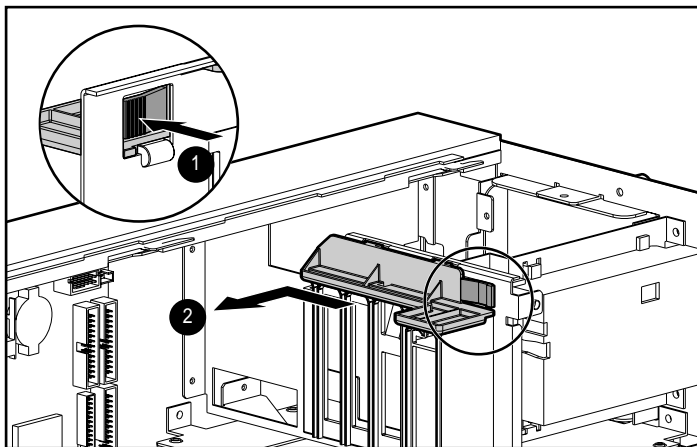


Figure 4-10. Removing the riser board shipping bracket

NOTE: The shipping bracket may not be included on all servers.

Installing an Expansion Board

To install an expansion board, such as a drive array controller or video board, refer to one of the following installation sources:

- For a text and illustration procedure, refer to the installation documentation that came with the option kit.
- For a text overview of the procedure, refer to the procedure below.

- For an illustration overview of the procedure, refer either to the Hardware Installation and Configuration poster shipped with your server or to the expansion board installation label located on the inside of the small access panel.

NOTE: If your server contains a shipping bracket, you must remove the bracket before installing the expansion board.

The expansion slots may be populated in any order. Slots 1 and 2 are connected to the primary (32-bit) PCI bus. Slots 3, 4, 5, and 6 are connected to the secondary (64-bit) PCI bus.

1. If the computer is on, turn it off and disconnect the power cord.



CAUTION: To avoid risk of damage to your system or expansion boards, remove all AC power cords before installing or removing expansion boards. With the front panel power switch in the Standby position, auxiliary power is still connected to the PCI expansion slot and may damage the card.

2. Disconnect any other external equipment connected to the computer.
3. Remove the small access panel.
4. Press down on the top ❶ of the expansion slot latch and open the latch toward the rear ❷ of the expansion slot cage as shown below.
5. Remove the expansion slot cover ❸.

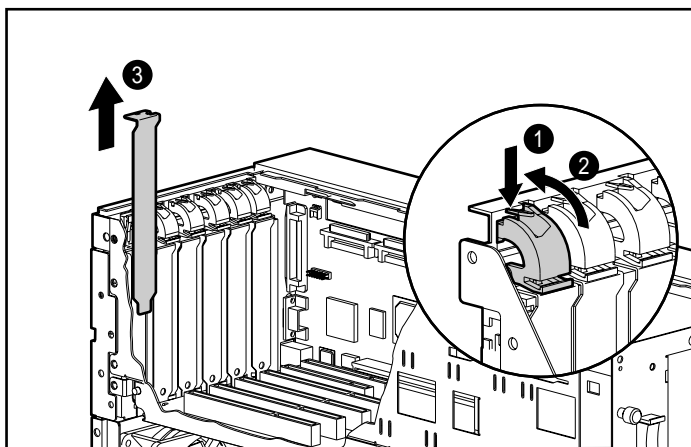


Figure 4-11. Opening an expansion slot latch and removing the slot cover

6. Insert the expansion board into one of the slots.

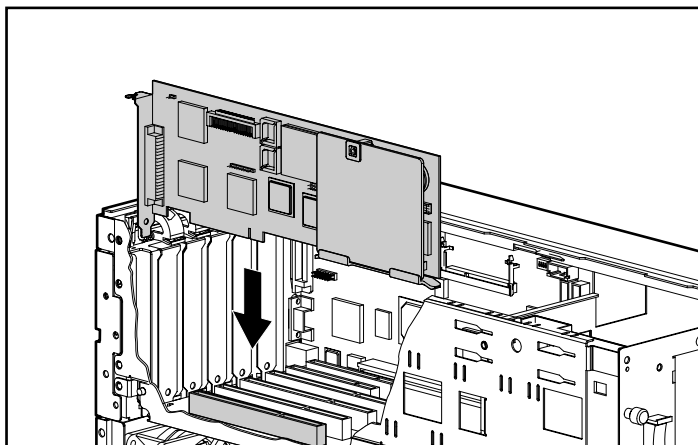


Figure 4-12. Inserting the expansion board

7. Close the expansion slot latch to secure the board.

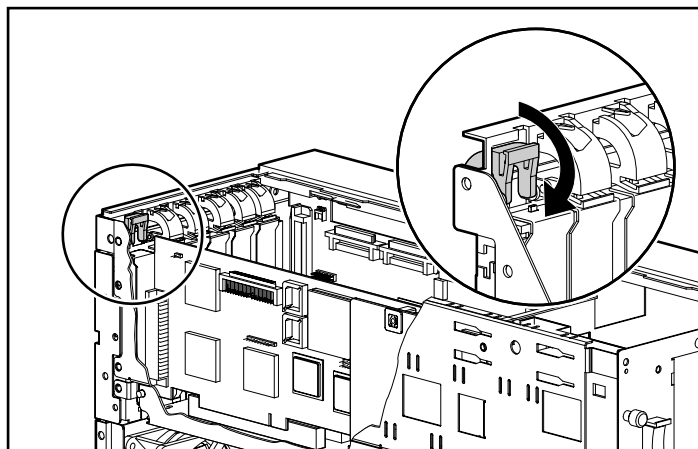


Figure 4-13. Securing the expansion board

8. Close the server and reconnect all cables.
9. Turn on the computer.
10. Run the System Configuration Utility, if needed.

Installing Additional Memory

You can expand computer memory by installing industry standard Synchronous DRAM (SDRAM) Dual Inline Memory Modules (DIMMs) on the system board. The following guidelines must be followed when installing additional memory:

- Use only 64-MB, 128-MB, 256-MB, 512-MB, or 1-GB modules (when available) of 133-MHz registered SDRAM.
- The DIMM sockets may be populated in any order.



CAUTION: Use only Compaq SDRAM modules. SDRAM from other sources may adversely affect data integrity.

To install more memory, refer to one of the following installation sources:

- For a text and illustrated procedure, refer to the installation documentation that came with the option kit.
- For a text overview of the procedure, refer to the procedure below.
- For an illustrated overview of the procedure, refer to the hardware installation and configuration poster shipped with your server or to the processor cage configuration label located on the inside of the large access panel.

Installing additional Compaq SDRAM:

1. If the computer is on, turn it off and disconnect the power cord.
2. Disconnect any other external equipment connected to the computer.
3. Open the large access panel.
4. Locate the appropriate slot on the system board.
5. Align the key slot on the bottom edge of the memory module with the tab in the slot.

6. Open the slot latches ❶ and insert the module into the socket ❷.

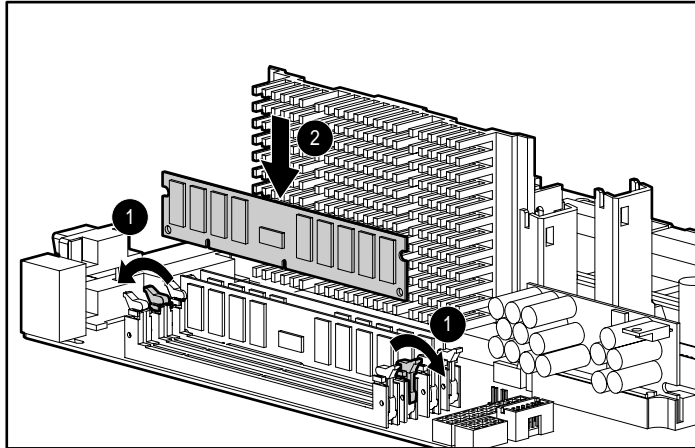


Figure 4-14. Installing a memory module on the system board

NOTE:

- Memory modules can be installed only in one direction. Match the notch on the module with the tab on the DIMM socket. Push the module down into the socket, ensuring that the module is fully inserted and properly seated.
- Heat sink and processor mounting hardware may appear different than illustrated in this guide.

7. Close the slot latches.
8. Reassemble the server.
9. Reconnect the power cord and any external peripherals.
10. Turn on the server.

Installing Additional Mass Storage Devices

The server is shipped standard with a total of 10 drive bays for installing additional internal mass storage devices. Non-SCSI devices including CD-ROM drives and SCSI devices such as tape or hard drives can be installed in the vacant non-hot-plug, removable media drive bays.

Six 1-inch SCSI hard drives can be installed in the standard hot-plug drive cage (SCSI IDs 0-5). The orientation of the rack model is different from the tower model shown in the figure below.

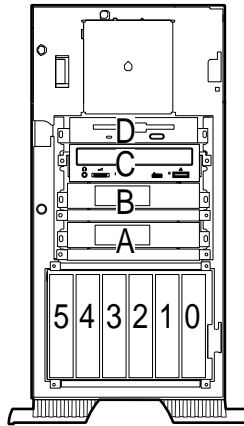


Figure 4-15. SCSI ID locations (tower server)

NOTE: SCSI devices connected on port 1 of the Dual Channel Wide Ultra2 SCSI Controller may be either internal or external drives, but not both.

SCSI Hard Drive Installation Guidelines

The following guidelines should be noted when adding SCSI hard drives. See Chapter 5, “SCSI Cabling Instructions,” for additional information.

The SCSI ID for each hot-plug hard drive is automatically set as the bay number (Bay 0 = SCSI ID 0).

- Except for hot-plug drives in ProLiant ML370 servers and storage systems, you must manually set the SCSI ID on each drive to a unique value in the range of 0 to 6 for each SCSI bus. Consult the documentation that came with the drive for instructions on setting the SCSI ID.
- If only one SCSI hard drive is used, it should be installed in the bay with the lowest number.
- Compaq SCSI non-hot-plug cables are terminated. Be sure to remove all terminating jumpers from third-party SCSI devices.
- SCSI hard drives on port 1 with the Integrated Dual Channel Wide Ultra 2 SCSI Controller may be either internal or external drives, but not both.
- All drives should be Wide Ultra2 SCSI type. Mixing other drive standards degrades the overall performance of your drive subsystem.
- Drives should be the same capacity to provide the greatest storage space efficiency when drives are grouped together into the same drive array.
- Run the System Configuration Utility after installing a drive.

Installing Mass Storage Devices

All ProLiant ML370 servers ship standard with four non-hot-plug, removable media drive bays. The top two bays are occupied with a 3.5-inch diskette drive and a CD-ROM drive; the bottom two half-height bays are vacant. You can install one full-height drive or up to two half-height devices in the vacant media bay areas.

Two half-height removable storage devices such as hard or floppy disk drives can be installed in the bottom two removable media drive bays. Also, one full-height storage device, such as a digital linear tape (DLT) drive, can be installed in the area occupied by the bottom two removable media drive bays. The following sections provide instructions for installing both half- and full-height devices. To install a device in this area and to cable the device, refer to

the installation documentation that came with the drive. Also, see Chapter 5, “SCSI Cabling Instructions,” for SCSI cabling information.

The figures below provide only an overview of removing the blank panel and installing a storage device. The rack model will be slightly different from the tower model shown in the following illustrations.

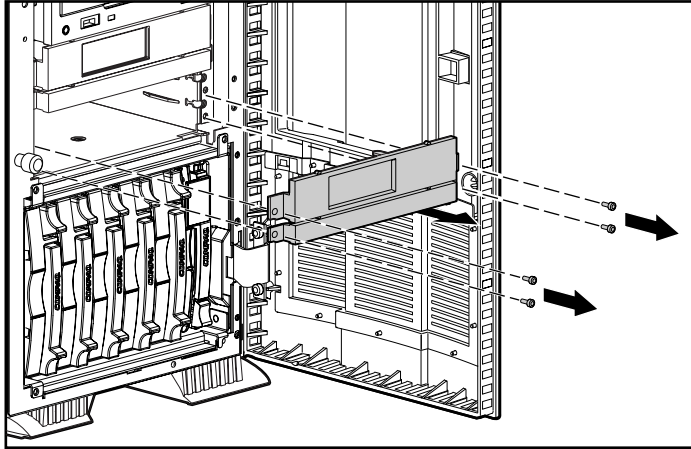


Figure 4-16. Removing a blank panel

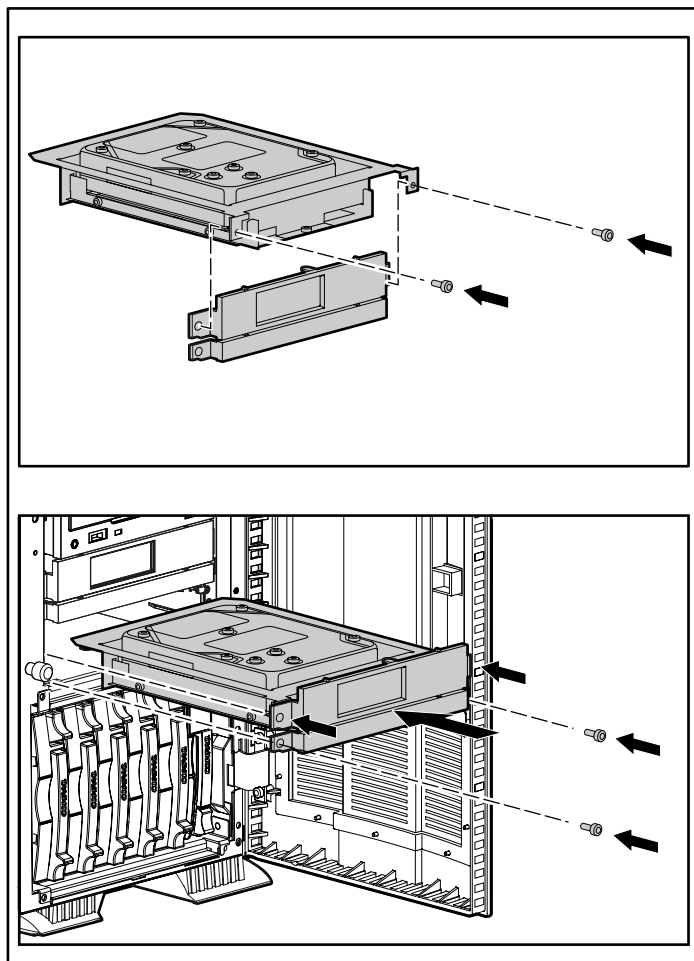


Figure 4-17. Installing a hard drive in the removable media area

Installing a Half-Height Device

You can install up to two half-height devices such as a tape drive in the media bay:

1. Unscrew and remove a bay blank as illustrated in the previous section.
2. Slide the tape drive into the open bay as show in the figure below and replace screws to secure the drive to the chassis.

NOTE: Some half-height devices require an additional tray or bay adapter for installation. Order trays or other adapters from your Compaq authorized reseller.

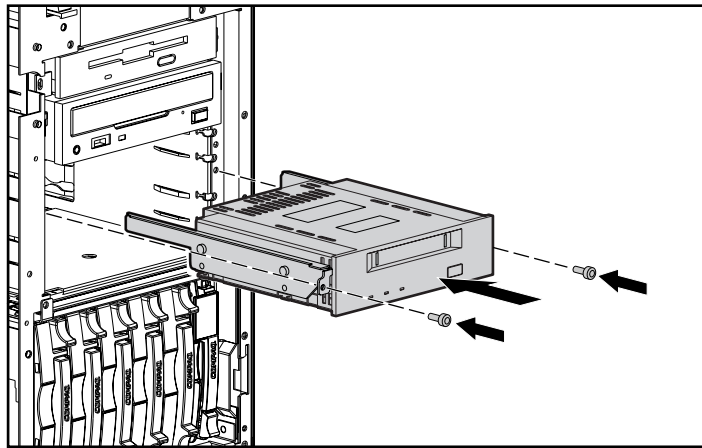


Figure 4-18. Installing a half-height tape drive in the removable media area

3. Attach one connector of the three-device SCSI cable to the SCSI port on the rear of the tape drive and the other end of the cable to SCSI port 1. Refer to Chapter 5, “SCSI Cabling Instructions,” for addition cabling information.
4. Attach the power connector to the rear of the tape drive.
5. Run the System Configuration Utility and load the appropriate drivers for your device.

Installing a Full-Height Device

Install a full-height such as a DLT tape drive in the removable media bay:

1. Unscrew and remove both bay blanks.
2. Slide the tape drive into the fully open bay, as shown in the following illustration.
3. Replace the screws to secure the drive to the chassis.

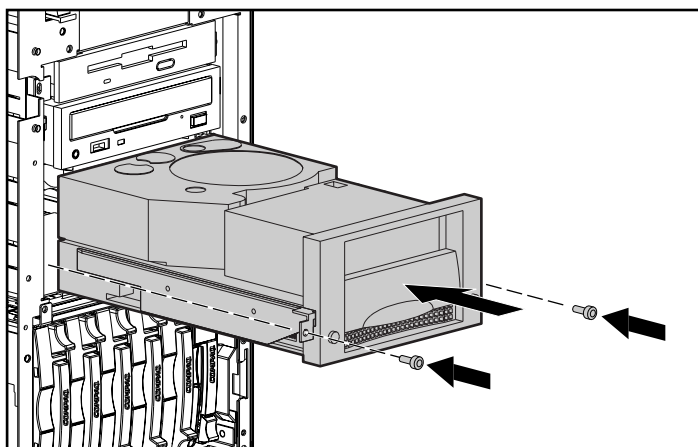


Figure 4-19. Installing a full-height DLT tape drive in the removable media area

4. Attach one connector of the three-device SCSI cable to the SCSI port on the rear of the tape drive and the other end of the cable to SCSI port 1. Refer to Chapter 5, "SCSI Cabling Instructions," for additional cabling information.
5. Attach the power connector to the rear of the tape drive.
6. Run the System Configuration Utility and load the appropriate drivers for your device.

Installing Hard Drives in the Hot-Plug Drive Cage

To install a hot-plug hard drive, first review the installation documentation that came with the drive. The following illustrations provide only an overview of a hard drive installation. The rack model will be slightly different from the tower model shown below.

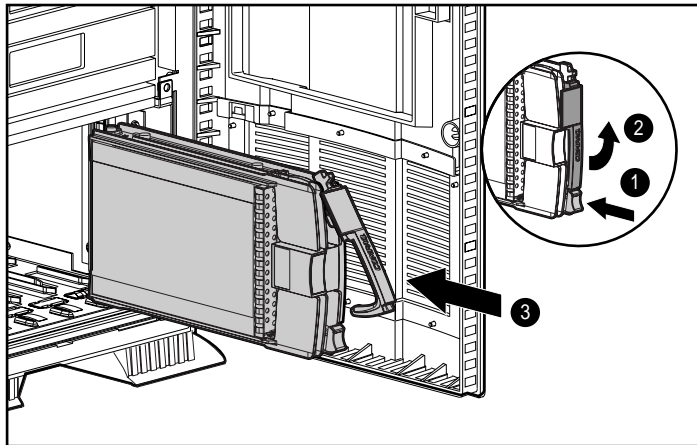


Figure 4-20. Opening ejector levers and inserting the hard drive into the drive cage

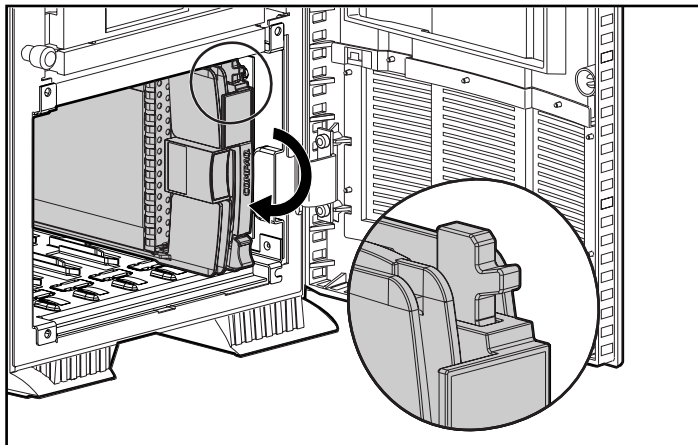


Figure 4-21. Closing ejector levers to secure the hard drive in the drive cage

Installing External Storage Devices

You can connect optional mass storage devices to the server two different ways, either by using the external SCSI port 1 connector on the back of the unit or by using an optional SCSI controller board. To install an external storage device to the external SCSI connector, refer to the installation documentation provided with the external storage device. Refer to Chapter 5, “SCSI Cabling Instructions,” for additional server cabling information.

The following illustration provides only an overview of this installation procedure. The ProLiant ML370 rack configuration is different from the ProLiant ML370 tower model shown below.



CAUTION: External SCSI port 1 and internal SCSI port 1 are the same port. Because the port cannot be used for both internal and external devices at the same time, disconnect any devices connected to the internal SCSI port 1 connector, including the terminated SCSI cable, before connecting external SCSI port 1 to an external device.

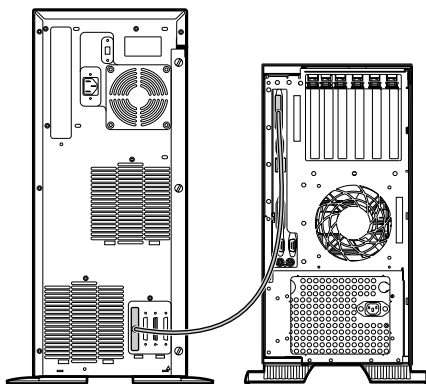


Figure 4-22. Connecting an external mass storage device to the tower server

Installing a Second Processor

Refer to one of the following processor installation documents:

- For a text and illustration procedure, refer to the installation documentation that came with the option kit.
- For a text overview of the procedure, refer to the procedure below.
- For an illustrated overview of the procedure, refer to the hardware installation and configuration poster shipped with your server or to the configuration label located on the inside of the large access panel.

To install a second processor:

1. If the server is on, turn it off and disconnect the power cord.
2. Disconnect any other external equipment connected to the computer.
3. Remove the large access panel.
4. Install the processor in the vacant processor slot 2 ② and the Processor Power Module (PPM) in the PPM socket ① next to processor slot 2 as shown below.

NOTE: Instructions for installing the PPM are provided later in this chapter.

5. Slide the processor down into the slot until the tabs lock into the latches.



CAUTION: For the system to function properly, processor slot 1 must be populated at all times. If it is necessary to remove the processor from slot 1, install the second processor in slot 1. Do not leave processor slot 1 empty while the system is in use.

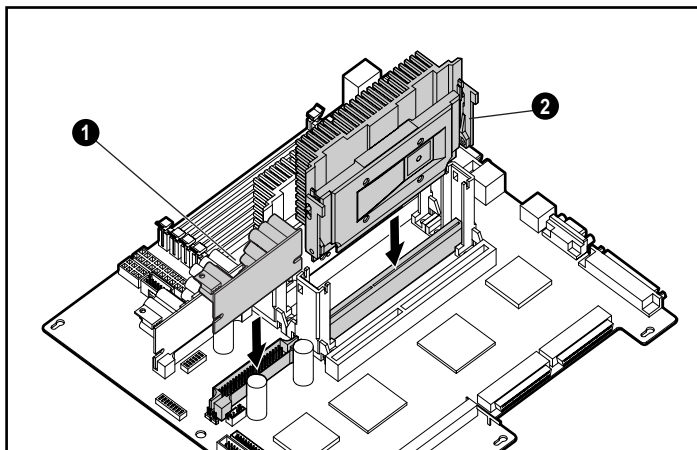


Figure 4-23. Installing a second processor

NOTE: The heatsink and processor guides may vary according to processor speed. Depending on your server, the heat sink and processor mounting hardware may appear different than illustrated in this guide.

NOTE: Processor switch settings do not require any adjustment when a second processor is installed. The system automatically detects and configures the processor.

6. Reassemble the server.
7. Prepare to install the Processor Power Module.

NOTE: When more than one processor is installed in your server, both processors must be running at the same speed. ProLiant ML370 servers do not support mixed processor speeds.

Installing a Processor Power Module

Every processor supplied by Compaq comes with a Processor Power Module (DC-to-DC converter). Each Processor Power Module (PPM) must be installed in the slot adjacent to its processor to provide power to that processor. If the processor is installed in processor slot 1, install the PPM in PPM slot 1. If the processor is installed in slot 2, install the PPM in slot 2. To locate the appropriate slots, refer to the label on the large access panel or to the system board illustration at the end of this chapter.



WARNING: To reduce the risk of personal injury from hot surfaces, allow the internal system components to cool before touching surfaces.

The PPM is keyed to ensure correct alignment. A notch in the center of the module's bottom edge must align with a tab in the mounting bracket.

1. Align the key slot in the bottom edge of the PPM with the tab in the expansion slot. The module will not seat properly if it is turned the wrong way.
2. Open the latches **1**, and insert the module straight into the socket on the system board **2**.

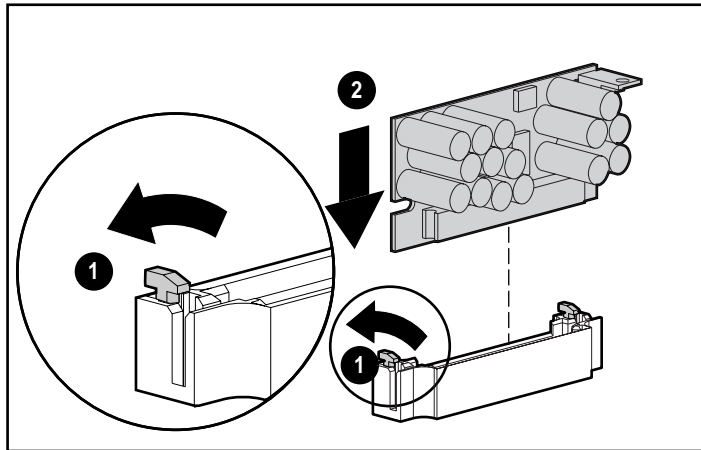


Figure 4-24. Installing a Processor Power Module (PPM)

3. Press the module into the socket until the latches click shut. The module should now be seated securely in the socket.
4. Replace the large access cover.
5. For the rack model, push the server into the rack, secure the thumbscrews, and reconnect cables.
6. Power on the server and use the System Configuration Utility to reconfigure your system.

Replacing the Riser Board and Riser Board Brace

If you need to remove the riser board or the riser board brace, do not separate these two components. Remove these components as one assembly. Detailed information about the riser board and slot locations is provided later in this chapter.



CAUTION: If the riser board or riser board brace needs to be replaced, both must be sent to Compaq as one unit. If they are sent separately, all warranties are voided for these components.

Installing the Riser Board and Riser Board Brace

1. If the server is on, place it in Standby mode and disconnect all power cords.
2. For the rack model, slide the server out of the rack for access to the system board area.
3. Remove both access panels.
4. Remove all expansion boards by reversing the procedure described in the section on “Installing an Expansion Board.”
5. Use a Torx screwdriver to loosen the two captive screws ❶ securing the riser board brace, as shown in the following figure.
6. Slide the riser board and riser board brace out of the server ❷, as shown in the following figure. The rack model riser board orientation is different from the tower model in the illustration.

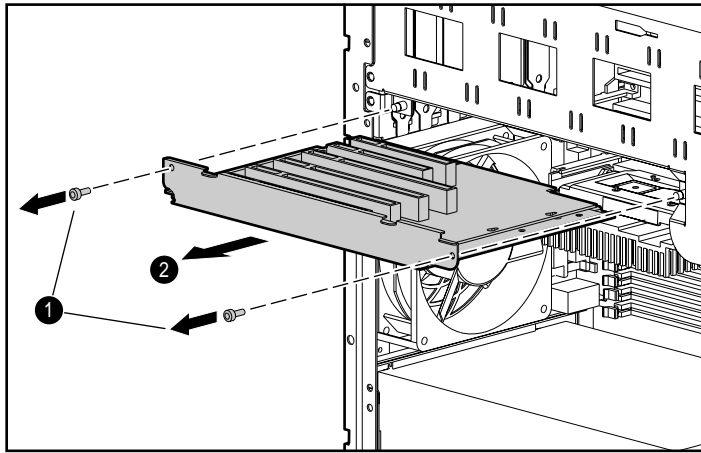


Figure 4-25. Removing the riser board and brace assembly

7. Install the new riser board and riser board brace assembly ❶ by aligning the contact end of the riser board with the riser board slot on the system board and pressing until the board fits snugly in the slot.
8. Replace and tighten the screws on the brace assembly ❷.

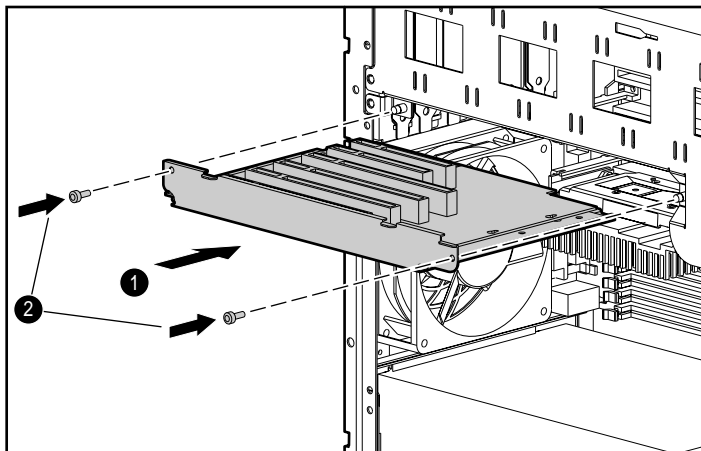


Figure 4-26. Installing the riser board and riser board brace

9. Replace all expansion boards.
10. Replace the server access cover.

11. Slide the rack model server back into the rack and use the thumbscrews to secure the server.
12. Reconnect power cords and turn the server on.

Integrated Smart Array Controller Option

The Integrated Smart Array Controller is installed directly onto the system board and provides seamless integration for running hard drives, storage media, and other system resources.

Installing the Integrated Smart Array Controller



CAUTION: Back up all data stored on existing drives before installing the controller. All data stored on non-array drives is destroyed when the new controller is installed.

Install the controller on the system board:

1. Put the server in Standby mode by turning off power at the power switch.
2. Disconnect the power cord and all external devices.
3. Open the small access panel as described at the beginning of this chapter.

4. Locate the Integrated Smart Array Controller slot on the system board, as shown in the following figure.

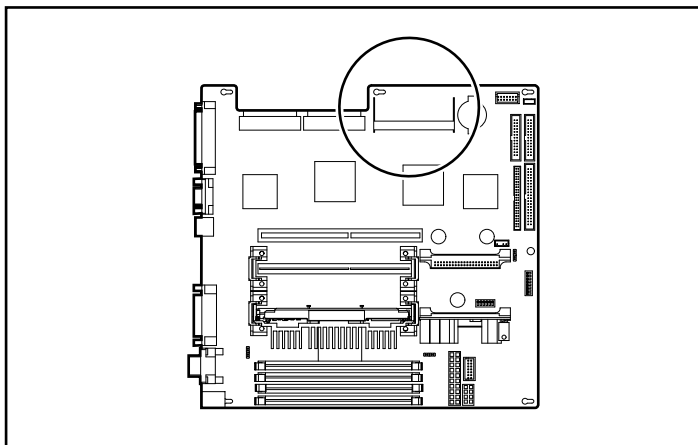


Figure 4-27. Locating the Integrated Smart Array Controller on the system board

5. Insert the tab end of the controller into the slot at an angle ❶, as shown in the following figure.

NOTE: The controller module is keyed to fit the controller slot with the notch toward the bracket wall. If the module does not snap into place, check the direction of the notch.

6. Press down evenly on both sides of the controller ❷ until it clicks into place.

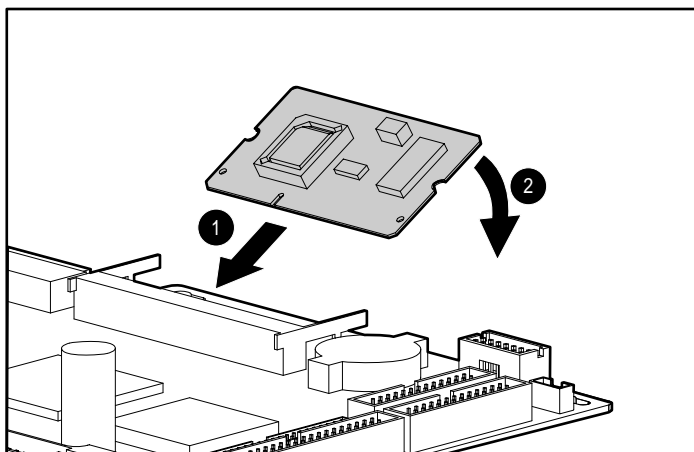


Figure 4-28. Installing the Integrated Smart Array Controller

7. Close the server and reconnect the power cord.
8. Turn on power to the server and allow the system to detect and configure the controller.



CAUTION: You are required to restore all data stored on the server after installing the optional Integrated Smart Array Controller. Any information that was not backed up before installation is now permanently deleted.

9. Restore any data that was backed up from the server before the controller was installed.

For information on configuring the Integrated Smart Array Controller, refer either to the documentation that shipped with the option kit or to the *Compaq Integrated Smart Array Controller User Guide*.

Board Layouts

Riser Board

The figure and tables below show slot locations and switch settings for the riser board. This information is also provided on the access panel labels located inside your server.

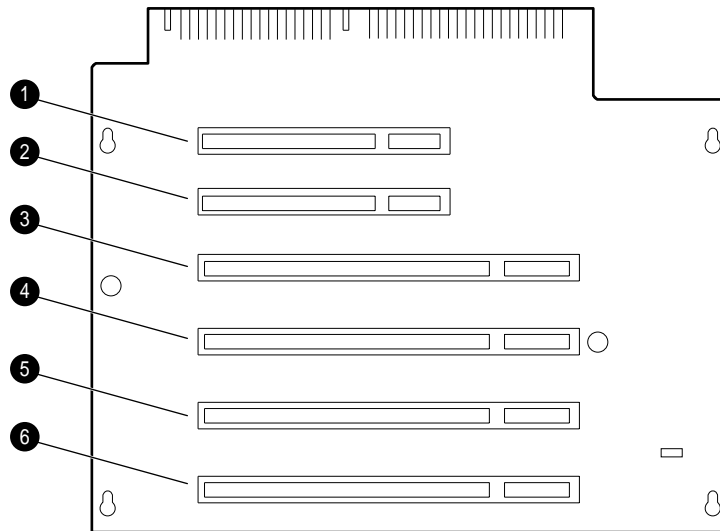


Figure 4-29. Locating slots on the riser board

Table 4-3
Riser Board Components

Number	Component
①	Primary PCI bus slot 1 (32-bit)
②	Primary PCI bus slot 2 (32-bit)
③	Secondary PCI bus slot 3 (64-bit)
④	Secondary PCI bus slot 4 (64-bit)
⑤	Secondary PCI bus slot 5 (64-bit)
⑥	Secondary PCI bus slot 6 (64-bit)

Table 4-4
System Configuration Switch (SW2) Settings

SW2 Setting - Default	Function
1 - Off	Embedded video disable
2 - Off	Configuration lock
3 - On	Rack mount
Off	Tower mount
4 - Off	Diskette override
5 - Off	Password disable
6 - Off	Maintenance

Note: When the system setting is OFF, the function is disabled.

System Board Components

The figure below illustrates the system board components on ProLiant ML370 servers.

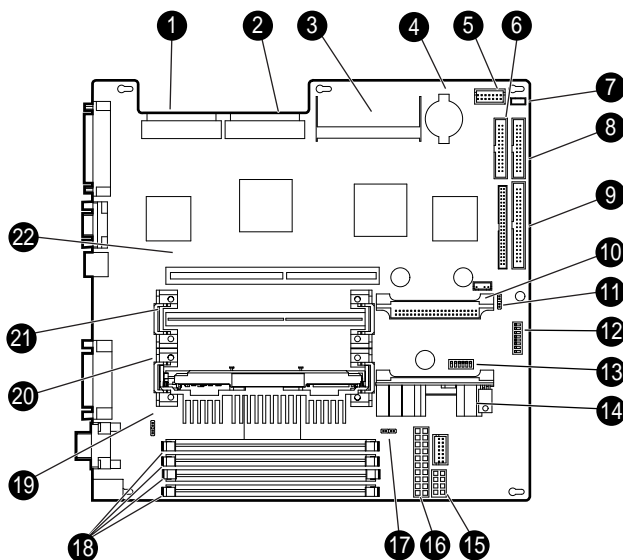


Figure 4-30. System board components

NOTE: Heat sink and processor mounting hardware may appear different than illustrated.

Table 4-5
System Board Components

Number	Component	Number	Component
❶	SCSI port 1	❷	Processor configuration switch—RESERVED
❸	SCSI port 2	❹	System configuration switch
❺	Integrated Smart Array Controller slot	❻	Processor Power Module slot 1 (populated)
❼	Battery	❽❿	Power supply signal header
❾	Power switch connector	❾	Power supply connectors
❿	LCD connector	❿	DIMM sockets
⓫	Virtual power button connector	⓫	Processor fan header
⓬	Diskette drive connector	⓬	Processor slot 1 (populated)
⓭	CD-ROM connector	⓭	Processor slot 2
⓮	Processor Power Module (PPM) slot 2	⓮	Riser board slot
⓯	Slot fan header		

Note: Your server is configured for the appropriate processor settings at the factory. The system board automatically detects and reconfigures the processor switch settings when you remove, install, or add a processor.

Chapter **5**

SCSI Cabling Instructions

The ProLiant ML370 tower and rack servers support connections for mass storage SCSI devices in three areas:

- Internal removable media area
- Internal hot-plug hard drive cage
- External storage devices

All of the required SCSI cabling equipment you need to install Compaq mass storage devices is shipped with your server or with the SCSI storage device option kits.

SCSI Cabling Equipment

ProLiant ML370 servers are shipped with two preinstalled SCSI cables to connect hard drives and removable media devices to an Integrated Dual Channel Wide Ultra2 SCSI Controller port on the system board. The default cabling configuration below shows a three-device, terminated SCSI cable connecting SCSI port 1 to the removable media area ❶ and a point-to-point SCSI cable connecting SCSI port 2 to the hot-plug drive cage ❷.

Cables for any configuration involving standard or optional equipment are provided with the server or with the appropriate option kit.

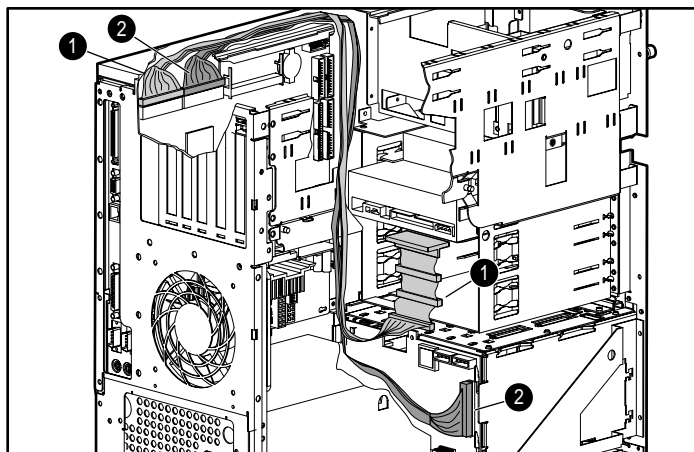


Figure 5-1. Default cabling configuration

Three-Device, Terminated SCSI Cable from SCSI Port 1 to the Removable Media Area

The three-device cable ❶ shown above connects up to three SCSI devices, which are installed in the removable media area. One end of the SCSI cable is connected to SCSI port 1 of the server, the other end of the cable is bundled inside the vacant bays of the removable media area and is not connected to any SCSI device.

When you install SCSI devices in the removable media area, connect the devices to this SCSI cable.

NOTE: Your configuration may vary and devices may be installed in the removable media area.

Point-to-Point SCSI Cable from SCSI Port 2 to the Hot-Plug Hard Drive Cage

The point-to-point SCSI cable ❷ shown in Figure 5-1 connects to a hot-plug SCSI hard drive from the drive cage to SCSI port 2. The point-to-point SCSI cable is bi-directional so that either end can be connected to SCSI port 2.

Wide-to-Standard SCSI Cable Adapter

To enable the use of Fast-SCSI-2 devices in the removable media area with the Integrated Dual Channel Wide Ultra2 SCSI Controller, an adapter is required to link the SCSI cable with the Fast-SCSI-2 device. This adapter is included in all Compaq option kits containing narrow SCSI devices. To purchase an adapter for use with any third-party option, order the Wide-to-Standard SCSI Cable Adapter Option Kit from your local Compaq authorized reseller or Compaq authorized service provider.

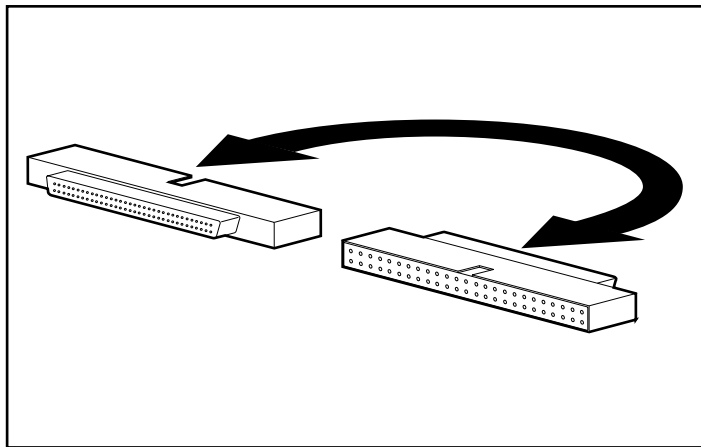


Figure 5-2. Wide-to-standard SCSI cable adapter

SCSI Device Installation Guidelines

The following guidelines apply for adding SCSI devices:

- The SCSI ID for each hot-plug hard drive is set as the bay number (Bay 0 = SCSI ID 0).
- If only one SCSI hard drive is used, it should be installed in Bay 0.
- The Integrated Dual Channel Wide Ultra2 SCSI Controller supports both internal or external storage devices.
- Be sure to remove all termination from third-party SCSI devices.
- Run the System Configuration Utility after installing a SCSI device, as needed.

Determining SCSI Cabling Requirements

To determine SCSI cabling requirements, answer all of the following questions about the mass storage device you are installing:

1. Will the SCSI cabling be internal or external? Refer to the appropriate internal cabling or external cabling section in this chapter.
2. Will the Integrated Dual Channel Wide Ultra2 SCSI Controller be used?
If yes, refer to the following section, “Internal SCSI Cabling for the Integrated Dual Channel Wide Ultra2 SCSI Controller,” for SCSI cabling instructions.
3. Will an optional SCSI controller expansion board be used? If yes, refer to option documentation supplied with the controller and to the cabling tables that follow for SCSI cabling instructions.
4. Which internal SCSI drive type, drive cage, and expansion slot will be used?
 - ☐ Hot-plug SCSI hard drives are installed in the hot-plug drive cage.
 - ☐ Non-hot-plug SCSI hard drives can be installed in the removable media area.
 - ☐ Fast SCSI-2 devices require a SCSI adapter to use the Integrated Dual Channel Wide Ultra2 SCSI Controller.
 - ☐ SCSI tape drives are installed in the removable media area.
 - ☐ SCSI CD-ROM drives are installed in the removable media area.
 - ☐ Separate SCSI controller boards are installed in the expansion slots.

5. Is the internal SCSI mass storage device a Fast SCSI-2 device? If yes, an adapter is needed if you are using the Integrated Dual Channel Wide Ultra2 SCSI Controller or a Wide-SCSI controller board. Order the adapter kit from your Compaq authorized reseller.
6. Is the internal SCSI mass storage device a non-hot-plug device? If yes, the device can only be installed in the removable media area. Refer to option documentation supplied with the controller and to the cabling tables that follow for SCSI cabling instructions.
7. Is the internal SCSI mass storage device a hot-plug hard drive? If yes, the device can only be installed in the hot-plug drive cage. Refer to option documentation supplied with the controller and to the cabling tables that follow for SCSI cabling instructions.

Internal SCSI Cabling for the Integrated Dual Channel Wide Ultra2 SCSI Controller

Factory Default Configuration

As shown in the following figure, the server is shipped from the factory with two SCSI cables:

- Point-to-point SCSI cable
- Three-device, terminated SCSI cable

As shown in the following figure, both cables are connected to the Integrated Dual Channel Wide Ultra2 SCSI Controller, each in one of the two SCSI ports. The controller end of the point-to-point SCSI cable is connected to internal SCSI port 2 ②, and the device end of the cable is connected to the backplane of the hot-plug drive cage.

The controller end of the three-device, terminated SCSI cable is connected to the internal SCSI port 1 ①. The device end of this cable is located inside the vacant bays of the removable media area. You will use this terminated SCSI cable to connect any optional SCSI devices such as tape drives and hard drives.

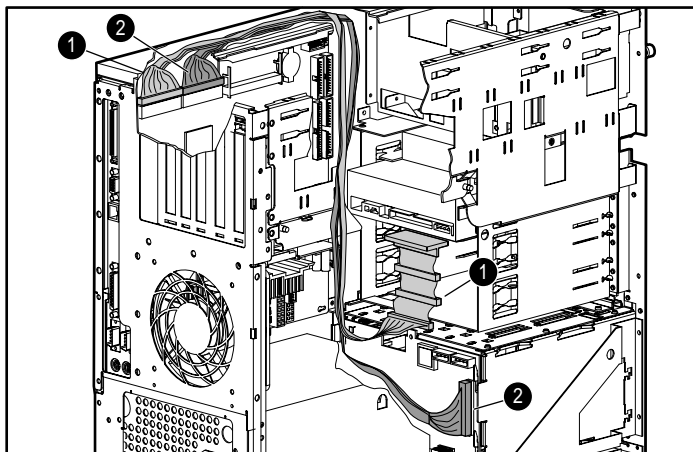


Figure 5-3. Default cabling configuration

In the factory configuration, the server is ready for the installation of hot-plug hard drives in the hard drive cage. The server sets SCSI IDs automatically and no additional cables are required.

Several optional controllers for expanding storage capacity or running arrays are available from Compaq and Compaq authorized resellers:

- Smart Array 221 Controller
- Smart Array 3200 Controller
- Smart Array 4200 Controller
- 64-Bit Dual Channel Wide Ultra2 SCSI Adapter
- Integrated Smart Array Controller

For additional information about features and installation of the Integrated Smart Array Controller, refer to the information in the option kit and in Chapter 4, “Installing Hardware Options.”

Connecting an Array Controller to Hot-Plug Drives

Connecting a Controller Board to the Hot-Plug Drive Cage

ProLiant ML370 servers use an integrated SCSI array controller to run hard drives and other system resources. The following adapter and controllers are available from Compaq authorized resellers:

- Smart Array 221 Controller
- Smart Array 3200 Controller
- Smart Array 4200 Controller
- 64-Bit Dual Channel Wide Ultra2 SCSI Adapter

The figure below shows a Smart Array 3200 Controller connected to the drive cage in the ProLiant ML370 tower model. The Smart Array 3200 Controller has two SCSI buses that may be configured as both external, both internal, or one internal and one external.



CAUTION: Refer to the user documentation included with each array controller option kit for detailed instructions, precautions, and guidelines for cabling and system configuration requirements.

Connect the array controller to the hard drive cage as shown in the figure below:

1. Disconnect the point-to-point SCSI cable from SCSI port 2.
2. Connect the controller end of the point-to-point SCSI cable to a SCSI connector ❶ on the controller board.
3. Connect the other end of the point-to-point SCSI cable to the backplane of the hot-plug drive ❷.

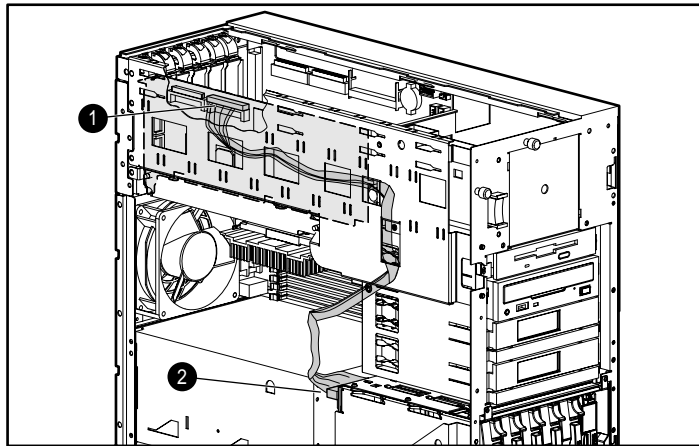


Figure 5-4. Connecting a controller board to the hot-plug drive cage

Connecting the Controller Board to Removable Media Devices

Controller boards can be connected to removable media devices directly with the three-device, terminated SCSI cable provided with your server. The figure below shows a controller cabled to a device in the removable media area.

Connect the controller to the removable media area:

1. Locate the three-device, terminated SCSI cable. No additional cables are required.
2. Connect the controller end of the three-device SCSI cable to a SCSI connector on the controller.
3. Connect the other end of SCSI cable to a tape drive or other removable media device.

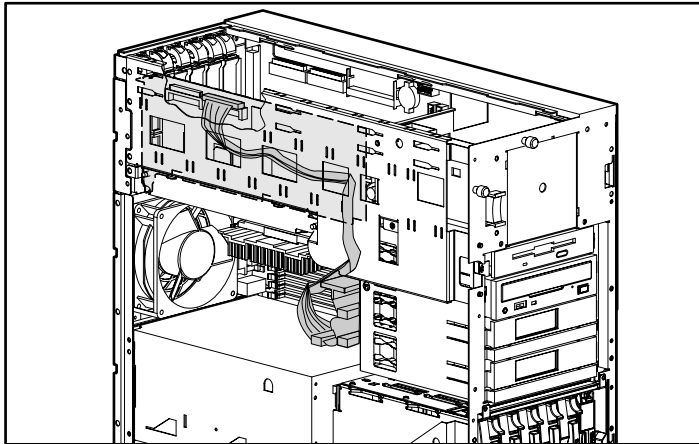


Figure 5-5. Connecting an array controller to a device in the removable media area

Running Internal and External Drives

Optional mass storage SCSI devices such as Compaq ProLiant Storage Systems can be connected to the server by using the external SCSI connector on the back of the unit. To connect to an external storage device as shown below, refer to the installation documentation provided with the external storage device.

1. Disconnect all devices, including the three-device, terminated SCSI cable, from SCSI port 1.
2. If it is not connected already, connect the hot-plug hard drives to SCSI port 2 ② with the point-to-point cable provided with your server, as shown below. This will be the only internal cabling present with this cabling configuration.

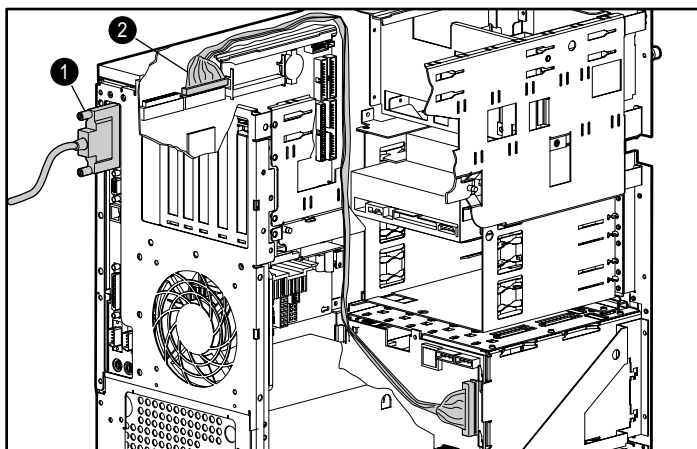


Figure 5-6. Connecting SCSI port 2 to the drive cage

3. Connect the external SCSI connector on the rear panel of the server ① to the external SCSI connector on the rear panel of the storage system.

The figure below shows the SCSI connection of the ProLiant ML370 server to an external storage system.

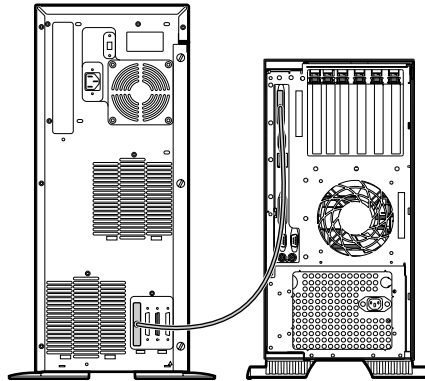


Figure 5-7. Connecting the external SCSI connector to a storage device

The external SCSI connector on the rear panel of the server is dedicated for use with external SCSI devices only, and the internal SCSI port 1 connector is dedicated for use with internal SCSI devices only. SCSI port 1 cannot be used for both internal and external devices at the same time.

IMPORTANT: Before connecting an external SCSI device to the external SCSI connector on the rear panel of the server, disconnect all devices from the internal SCSI port 1, including the three-device, terminated SCSI cable.

Integrated Smart Array Controller

Compaq Integrated Dual Channel Wide Ultra2 Controller can be upgraded to the Integrated Smart Array Controller easily and without using one of the expansion slots on the system board. Order the Compaq Integrated Smart Array Controller Option Kit from any Compaq authorized reseller. Installation hardware and instructions are provided with the option kit.

Features

The Integrated Smart Array Controller is an Integrated Dual Channel Wide Ultra2 SCSI Controller with RAID capability. Both channels support Low Voltage Differential (LVD) SCSI devices.

The controller supports the following features.

- 16 MB total memory, 8 MB read-ahead cache
- Support for up to six internal Wide Ultra2 SCSI hot-plug drives in RAID 0, 1, 0+1, and 5
- Support for external backup tape drives and external storage through the connector on the rear panel
- Migration from any RAID level to any RAID level
- Migration from any stripe size to any stripe size
- Support for Low Voltage Differential (LVD) SCSI devices on both channels
- Pre-Failure Notification and Pre-Failure Warranty through the Compaq Insight Manager
- Online spares
- Online capacity expansion

SCSI port 2 is dedicated to controlling the SCSI drives in the internal drive bay. Port 1 connects to an external SCSI connector or to an internal removable storage device, but not both at the same time.

For instructions on installing the controller, refer to the instructions provided in Chapter 4, "Installing Hardware Options," and the Integrated Smart Array Controller Option Kit.

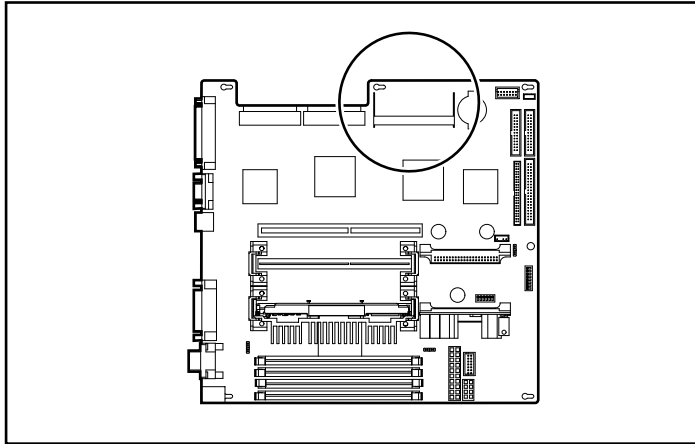


Figure 5-8. Locating the Integrated Smart Array Controller slot on the system board

Chapter 6

Server Configuration and Utilities

This chapter provides instructions for using Compaq System Configuration Utilities, for using Compaq SmartStart, and for loading device drivers.

System Configuration Utility

Compaq System Configuration Utility performs a wide range of configuration activities, including:

- Automatically configuring PCI plug-and-play boards
- Providing switch and jumper settings
- Resolving resource conflicts in memory, port addresses, and interrupt requests (IRQ)
- Managing the installation of mass storage devices such as hard drives, tape drives, and diskette drives
- Setting and storing Power-On features such as date and time
- Storing configuration information in nonvolatile memory
- Installing an operating system
- Running diagnostic tools such as TEST and INSPECT Utilities

If the SmartStart and Support Software CD is used the first time the server is configured, the SmartStart program automatically creates a Compaq utility partition and installs the System Configuration Utility and other Compaq utilities in that partition.

IMPORTANT: The Compaq utilities partition should not be confused with the partitions created by your operating system.

In ProLiant ML370 servers, the system ROM automatically configures the system when adding or removing memory, a second processor, or a PCI expansion board.

The System Configuration Utility uses option configuration (.CFG) files to set up and configure the computer. The .CFG files provide information such as switch settings, IRQs, and software installation guidelines. The .CFG files for Compaq servers are located on the System Configuration diskettes and Compaq SmartStart and Support Software CD shipped with your server.

For PCI boards, the utility reads the configuration options from the PCI board's configuration space, or as an option, from a PCI configuration file (.PCF). The .PCF file can be found on the following diskettes or CD:

- Compaq Options Configuration Files diskette
- Non-Compaq Option Configuration Files diskette
- Compaq SmartStart and Support Software CD

The .CFG file provides board resource requirements for setting switch and jumper configurations.

Resolving Resource Conflicts

If you add a PCI expansion board after the initial startup, the system detects this change when you turn on the computer. The system ROM reads the PCI board identifier, compares it with the current configuration information stored in nonvolatile memory, and automatically configures the PCI board. If a user selection is required, the system ROM enables the board with default settings and provides a POST message advising the user to use the System Configuration Utility to view or change the default settings. Additionally, you can change the default automatic settings by running the System Configuration Utility.

The System Configuration Utility reads the option configuration .CFG files to determine any resource conflicts, such as two devices requiring the same hardware interrupt. If the system identifies a conflict, the software rechecks all expansion board specifications to determine if settings for a previously read board can be changed to automatically resolve the conflict between the two boards.

Starting the System Configuration Utility

The first time you start the Compaq System Configuration Utility, follow the procedure on the Compaq SmartStart installation poster.

After the Compaq SmartStart and Support Software CD is used for the first time to create and populate the system configuration partition, you may access the System Configuration Utility as follows:

1. Press **Ctrl+Alt+Del** to reboot the server.
2. Press **F10** when the following prompt appears at the top of the screen during Power-On Self-Test (POST):

Press "**F10**" key for System Partition Utilities

IMPORTANT: The text appears for only two seconds. If you do not press **F10** during this time, you must reboot the server and login again.

System Configuration Utility Main Menu

This overview of the main menu options explains how to access the main menu and how to set the Power-On features. The following options are available from the main menu:

- **System Configuration**

This option explains the configuration process step-by-step. Select the System Configuration option when a configuration change is required. For example, select this option when adding, replacing, or removing expansion boards, or when adding a diskette drive or a hard drive.

- **Operating System Installation**

This option allows you to install one of the operating systems listed or to specify installation of an operating system that is not listed.

- **Diagnostics and Utilities**

This option tests and inspects the computer.

- **Exit from this Utility**

This option closes the utility and restarts the computer.

System Configuration Menu

The following options are available from the System Configuration Utility menu:

- Hardware configuration
- Drive array configuration
- Power-On defaults
- System configuration partition
- Configuration backup
- Return to the previous menu

Configuring Hardware

After the Configure Hardware menu, a screen with five steps is displayed. Each step is listed below with a brief explanation.

- Important System Configuration Information

This step provides an overview of the configuration process.

- Add or Remove Boards

Press **Enter** to view a list of the boards and options in your configuration. You can add, move, and delete boards from this list until it shows all the boards and options that will be installed in your system.

- View or Edit Details

This step displays an overview of current configuration settings and installed hardware. From this screen, you can change your hardware resource settings and many other items, including security features, ASR, Integrated Remote Control (IRC), and boot order.

- Examine Required Switches

Find the appropriate board's switch and jumper settings and adjust them to match the settings displayed on the screen.

NOTE: All processor switch settings are reserved. The system automatically detects and reconfigures switch settings for additional processors or processor upgrades.

- Save and Exit

Use this step to save the configuration update after you have made changes.

Drive Array Configuration

This option runs the Compaq Array Configuration Utility. This utility allows you to view and make changes to array controller configurations.

Power-On Defaults

You can set and change the Power-On features at any time.

1. Select System Configuration from the Main Menu to select Power-On Defaults.
2. Set the current date in the format:
mm-dd-yyyy
3. Set the correct time in the format:
hh:mm:ss
4. Set the Power-On Num Lock state:
() Off
(*) On

* This setting activates the numeric keypad when the computer is turned On.

System Configuration Partition

The system configuration partition utility allows you to copy and delete configuration files, and create, upgrade, or delete a system configuration partition on the hard drive for the utilities.

The following menu options are available:

- Create System Configuration Partition
- Upgrade System Configuration Partition
- Delete System Configuration Partition
- Copy Files
- Delete Files

Creating a New System Configuration Partition

If you used SmartStart to configure your server initially, a new Compaq utility partition was created automatically. If SmartStart was not used for initial server configuration, follow the procedure below to create a system configuration partition:

1. Insert the Compaq SmartStart and Support Software CD in the CD-ROM drive and turn on the server.

IMPORTANT: The system configuration partition requires about 32 MB of disk space at the beginning of the hard drive and an unused entry in the boot record.

2. Select Create/Update System Partition. This option requires you to restart the server three times during the procedure.

Verifying the System Configuration Partition

Verify that the system configuration partition exists:

1. Remove any media from the CD-ROM drive and the diskette drive.
2. Restart the system by pressing **Ctrl+Alt+Del** or by turning the server off and then on again from the power switch.
3. Press **F10** when the following prompt appears:

Press "**F10**" key for System Partition Utilities

IMPORTANT: The text appears for only two seconds. If you do not press **F10** within the two seconds, you must reboot the server and begin again.

4. If a system configuration partition exists, the server boots to the partition. If not, a message displays indicating that no system configuration partition exists.

Upgrading the System Configuration Partition

Upgrade the system configuration partition:

1. Insert the Compaq SmartStart and Support Software CD in the CD-ROM drive and turn on the computer.
2. Select Upgrade System Partition.
3. Select the option to upgrade the utilities. Compaq SmartStart copies the new utilities from the CD to the system configuration partition.

Configuration Backup

The Configuration Backup option allows you to create a backup of the system configuration and to restore the system configuration from the backup.

The following menu options are available:

- Backup
- Restore

Configuration Backup and Configuration History Files

When you save and exit the System Configuration Utility, the utility retains a history of the configuration. The utility maintains three versions of the system configuration files, including the current and two previous configurations in both binary (.SCI) and text (.CHL) file formats. The table below describes the system configuration files.

- The .SCI files are used to restore a previous configuration using the System Configuration menu and Restore System Configuration from a .SCI File submenu.
- The .CHL files are text-based files displaying information that is stored in the corresponding .SCI file.

Table 6-1
System Configuration History Files

Filename	Description
SYSTEM.SCI	Current configuration information
SYSTEM1.SCI	Previous configuration information
SYSTEM2.SCI	Previous configuration information (oldest)
SYSTEM.CHL	Textual representation of SYSTEM.SCI file

continued

Table 6-1
System Configuration History Files *continued*

Filename	Description
<i>SYSTEM1.CHL</i>	Textual representation of <i>SYSTEM1.SCI</i> file
<i>SYSTEM2.CHL</i>	Textual representation of <i>SYSTEM2.SCI</i> file (oldest)

IMPORTANT: If there is not enough disk space for the entire system configuration history log, the utility deletes log files starting with the oldest files (*SYSTEM2.SCI* and *SYSTEM2.CHL*) until enough disk space is available for the current configuration backup and history files.

Configuring PCI Boards Automatically

The system ROM automatically configures PCI boards. If a user selection is required, the system ROM enables the board with default settings and provides a POST message advising the user to use the System Configuration Utility to view or change the default settings. Also, you can use the System Configuration Utility to change the default automatic settings.

Removing Boards

System ROM automatically reconfigures the server after a PCI board, memory module, or second processor is removed.

Installing an Operating System

Single Processor Operating Support

Compaq ProLiant ML370 servers support the following operating systems:

- Novell NetWare 3.2, 4.2, and 5.0
- NetWare for Small Business 4.2 and 5.0
- Microsoft Windows NT Server 3.51 and 4.0
- Microsoft NT Enterprise 4.0
- Microsoft NT Terminal Server 4.0
- Microsoft BackOffice Small Business Server 4.0 and 4.5
- Microsoft Windows 2000 Server (when available)
- SCO OpenServer 5.0.4 and 5.05
- SCO UnixWare 7.0.1 and 7.1
- SCO UnixWare 2.1.2 and 2.1.3
- IBM OS/2 Warp Server and Warp Server Advanced 4.0
- IBM OS/2 Warp 4.0
- IBM OS/2 Warp Connect 3.0
- IBM OS/2 Warp Server for E-Commerce
- Banyan VINES 7.x and 8.x
- Sun Solaris 2.6 and 7 Intel Platform Edition

SMP Operating System Support

Compaq provides optimized software support for Dual Processing Boards with:

- Novell NetWare 4.2 SMP
- Novell NetWare 5
- Microsoft Windows NT Server 3.51 and 4.0
- Microsoft NT Enterprise 4.0
- Microsoft NT Terminal Server 4.0

- Microsoft BackOffice Small Business Server 4.0 and 4.5
- Microsoft Windows 2000 Server (when available)
- SCO OpenServer 5.0.4 SMP and 5.05 SMP
- SCO UnixWare 7.0.1 and 7.1 OSMP
- SCO UnixWare 2.1.2 OSMP and 2.1.3 OSMP
- IBM OS/2 Warp Server Advanced 4.0 with SMP
- IBM OS/2 Warp Server for E-Commerce
- Sun Solaris 2.6 and 7 Intel Platform Edition

If you use Compaq SmartStart to install the OS, the appropriate drivers are installed automatically. When you select the Operating System Installation feature from the System Configuration Utility main menu, the utility provides prompts to simplify the installation.

First, the utility prompts you to select the correct operating system. Use the arrow keys to select the operating system and press **Enter**. The utility then prompts you for the operating system CD or diskette.

Not all operating systems ship with each server. Consult your local reseller or Compaq Customer Service if you need a Compaq SmartStart pack with additional operating system support. Some operating systems have driver support and updates without an integrated Compaq SmartStart installation. You can also configure your server and manually install your operating system. Some operating systems have an integrated installation provided on the operating system's manufacturer CD.

Loading Compaq Device Drivers

Drivers are located on the Compaq SmartStart and Support Software CD. Drivers may also be downloaded from the Compaq website:

<http://www.compaq.com>

IMPORTANT: Always check *README* files on Compaq SmartStart or any Software Support Diskettes or CDs. If present, these files may contain information about important software updates.

Novell Device Drivers from Compaq

Your server must have certain device drivers installed to operate with the Novell operating systems. These drivers are located on the Compaq SmartStart and Support Software CD shipped with the server. If you use Compaq SmartStart to install the operating system, these drivers will be installed automatically. Otherwise, you can use Compaq SmartStart to create a Support Software for Novell Products (NSSD) diskettes to support a manual installation of Novell's operating systems.

For more information on these drivers, run the *README.COM* file in the root directory on any of the Support Software for Novell Products diskettes.

Compaq SmartStart Installation

If you use SmartStart to install the operating system, the drivers are installed automatically.

Manual Installation

Configure the server without using SmartStart:

1. With power to the server off, insert the Compaq SmartStart and Support Software CD into the CD-ROM drive.
2. Start your system.
3. Select Manual Installation.
4. Follow the instructions provided on the CD for your operating system.

Special Considerations

- If you are running NetWare 3.2, additional patches may be required. The most current patches are available from Novell at the support website under Updates, Since 3.2 Enhancement Pack Release:

[http:// support.novell.com](http://support.novell.com)

- If you are running intraNetWare or NetWare 4.11, the most current Support Packs are available from Novell at the support website under intraNetWare, NetWare 4.11. Run *README.COM* on any of the Support Software for Novell Products (NSSD) diskettes for more information about software support for Compaq ProLiant ML370 servers and for detailed driver installation instructions.
- Read *NETWORK.RDM* from the NSSD diskettes for additional information.

- Your ProLiant ML370 server features one IDE channel for IDE devices. For each IDE channel with an attached device, you must load the following drivers from the NSSD diskette according to the type of device attached:
 - ❑ For each IDE channel, type the following:
`LOAD A:\IDE\IDEATA.HAM`
 - ❑ For an IDE CD-ROM drive
`LOAD A:\IDE\IDECD.CDM`

Read *STORAGE.RDM* from the NSSD diskettes for additional information.
- If you are running NetWare 3.2, additional patches may be required. Additional patches are available from Novell through NetWare or from the support website:
<http://support.novell.com>

Microsoft Windows NT Device Drivers from Compaq

Drivers to support Microsoft Windows NT 3.51 and 4.0 on Compaq ProLiant ML370 servers are located on the Compaq Support Software Diskette for Novell products (NT SSD) for Microsoft Windows NT or on Windows NT retail product. These drivers are also located on the Compaq SmartStart and Support Software CD. The drivers on the NT SSD may be newer versions with support for new functionality, problem fixes, and so on. If you use Compaq SmartStart to install your operating system, these drivers are installed automatically. Otherwise, you can use Compaq SmartStart to create the Compaq SSD for Microsoft Windows NT from Compaq to support a manual installation of NT drivers.

For more information on driver installation, run the *README.BAT* file in the root directory of the SSD for Microsoft Windows NT. This action will load the WinHelp file *NTREADME.HLP*.

Compaq SmartStart Installation

If you use Compaq SmartStart to install the operating system, the drivers are installed automatically.

Manual Installation

Install the operating system without SmartStart:

1. With power to the server off, insert the Compaq SmartStart and Support Software CD into the CD-ROM drive.
2. Turn on power to your server and let the system boot up from the CD.
3. Select Manual Installation.
4. Follow the instructions provided on the CD for your operating system.

Special Considerations

Review the README files on the Compaq SmartStart and Support Software CD or Compaq SSD for Microsoft Windows NT diskettes for additional details. For Microsoft Windows NT 3.51:

- You must choose Custom Mode rather than Express Mode.
- During a text mode installation for the adapter driver, you must choose the IDE CD-ROM (Dual Channel) driver to detect the IDE CD-ROM.
- During a text mode installation for disk controller adapter, you must choose Other and insert the Compaq SSD for Microsoft Windows NT to install the Integrated Dual Channel Wide Ultra2 SCSI Controller driver support.

SCO OpenServer and SCO UnixWare Device Drivers from Compaq

If you are using the Compaq NC3163 Fast Ethernet NIC Embedded 10/100 WOL network controller on a ProLiant ML370 server and you do not plan to use the SmartStart installation process to set up your server, you must install updated support software for your controller to connect properly to the network. Your server must have certain device drivers to operate under the SCO OpenServer and UnixWare 2.1.2 and 2.1.3 operating systems. Drivers that are not bundled with SCO shipping media are located on the Compaq SmartStart and Support Software CD.

Compaq SmartStart Installation

An integrated Compaq SmartStart installation is available to assist you with installation of your server by automatically creating a Compaq utility partition with tools to help configure and diagnose your server. The Compaq SmartStart

and Support Software CD also includes all the SCO UNIX device drivers for your system.

Manual Installation

Alternatively, selecting the manual path after starting the Compaq SmartStart and Support Software CD automatically creates the system configuration partition server and allows you to use the SCO interview process. Depending on your operating system, it may be necessary to use the Compaq Boot Time Loadable Drivers (BTLD) diskette or the Compaq Host Bus Adapters (HBA) diskette along with the Compaq Extended Feature Supplement (EFS) diskette to install driver support. Drivers can be downloaded onto diskettes with tools available on the Compaq SmartStart and Support Software CD. To create these diskettes, boot the Compaq SmartStart and Support Software CD and follow the instructions to create Supplemental Support Software diskettes.

One of the diskettes on the Compaq EFS contains a bootable documentation diskette. Before attempting to install the SCO UNIX software, run this diskette and read the *README* file for the Compaq EFS. This file instructs you on how to use the BTLD or HBA diskettes along with the SCO installation media.

A third method is similar to the manual path method listed above. However, you must run the Compaq System Configuration Utility to configure the system, obtain the appropriate EFS for the SCO operating system release, and follow the manufacturer's installation instructions. Once again, depending on the operating system, it may be necessary to use the Compaq Boot Time Loadable Drivers (BTLD) diskette or the Compaq Host Bus Adapters (HBA) diskette along with the Compaq Extended Feature Supplement (EFS) diskette to install all the driver support. These utilities can be downloaded onto diskettes with tools available on the Compaq SmartStart and Support Software CD.

Creating Utility Diskettes

To create utility diskettes, boot the Compaq SmartStart and Support Software CD and follow the instructions to create Supplemental Support Software diskettes. One of the diskettes on the Compaq EFS contains a bootable documentation diskette. Before attempting to install the SCO UNIX software, boot this diskette and read the *README* file for the Compaq EFS. This file instructs you on how to use the BTLD or HBA diskettes along with the SCO installation media.

Compaq-specific drivers either included with the EFS or packaged with SCO media include:

- Compaq Ethernet/Token Ring Adapter
- Automatic Server Recovery-2
- Compaq System Health
- Compaq ProLiant ML370 Storage System
- Compaq SCSI and Intelligent Disk Array
- Compaq Fiber Storage Array Support
- Compaq Remote Insight Board Support
- Compaq System Utilities

Special Considerations

Review the *README* files on the Compaq SmartStart or EFS Diskettes or CDs for additional details.

IBM OS/2 Device Drivers from Compaq

If you are using the Compaq NC3163 Fast Ethernet NIC Embedded 10/100 WOL network controller on a ProLiant ML370 server and you do not plan to use the SmartStart installation process to setup your server, you must install updated support software for your controller to connect properly to the network.

Your server must have certain device drivers for some server options to operate using IBM OS/2 Warp Server and Warp Server Advanced 4.0, IBM OS/2 Warp Server Advanced 4.0 with SMP, IBM OS/2 Warp Connect 3.0, and IBM OS/2 Warp 4.0. These drivers are located on the Compaq SmartStart and Support Software CD you received with your server. If you use Compaq SmartStart to install your operating system, these drivers are loaded automatically.

Otherwise, you can use Compaq SmartStart to create IBM OS/2 Support Software Diskettes (SSD) from Compaq to support a manual installation or retail software installation of IBM OS/2. The installation diskettes can be customized for OS installation on Compaq servers by using the CPQSETUP utility on the IBM OS/2 SSD.

For more information on these drivers, run the *VIEWME.EXE* file in the root directory of the IBM OS/2 SSD Diskette 1 from Compaq.

Compaq SmartStart Installation

If you use Compaq SmartStart to install the OS/2 operating system, the drivers are installed automatically.

Manual Installation

Install the operating system and configure the server without Compaq SmartStart:

1. Insert the Compaq SmartStart and Support Software CD into the CD-ROM drive and start the server.
2. Select Manual Installation.
3. Follow the instructions from the CD for your operating system.
4. If you have already created the SSD diskettes as part of your manual Installation process, skip to Step 8.
5. Insert the Compaq SmartStart and Support Software CD into the CD-ROM drive of a system running Microsoft Windows 95 or Microsoft Windows NT 4.0.
6. In the Diskette Builder Software selection screen, choose Compaq IBM OS/2 NIC Support Software and Compaq IBM OS/2 Support Software (SSD).
7. Follow the instructions to create the appropriate diskettes.
8. Insert the diskette titled "Compaq IBM OS/2 Support Software Diskette for Novell products, Utilities-1" into the A: drive.
9. Change path to A:
10. Type **VIEWME** at the command prompt.
11. Follow the directions to install Compaq system and storage drivers and Compaq utilities on your Compaq server.
12. Follow the instructions given in the corresponding section to install Compaq NIC drivers on your Compaq server.

NOTE: If you do not have easy access to a Windows 95 or Windows NT server, you can start the server now running IBM OS/2 with the SmartStart and Support Software CD and then choose the Support Software option to create the SSD diskettes.

Retail Installation

You cannot install IBM OS/2 on a Compaq server using the unmodified installation diskettes that come with the IBM OS/2 retail CD. To install IBM OS/2 on a Compaq server:

1. Create IBM OS/2 SSD diskettes from the Compaq SmartStart and Support Software CD as outlined in the instructions for manual installation.
2. Use the CPQSETUP utility available on these diskettes to modify your IBM OS/2 installation diskettes.
3. Install IBM OS/2 using the diskettes modified in Step 2.
4. Go to Step 8 of the previous procedure, "Manual Installation."

Sun Solaris Device Drivers from Compaq

Your server must have certain device drivers for some server options to operate using the Solaris (Intel platforms) operating system. Compaq provides driver support for Solaris 2.6 and 7.

Solaris drivers and installation procedures are located at the SunSoft website:

<http://access1.sun.com/drivers>

Banyan VINES Device Drivers from Compaq

Your server must have certain device drivers for some server options to operate using the Banyan VINES operating system. Compaq provides driver support for Banyan VINES 7.x and 8.x.

These drivers are located on the Compaq SmartStart and Support Software CD shipped with your server. You can use SmartStart to create a Banyan VINES Support Software Diskette (SSD) from Compaq to support a manual installation of Banyan VINES. There are two types of SSDs:

- LAN adapter SSD
- Peripheral adapter SSD

These SSDs contain the *README* files that list available drivers and driver installation procedures.

Drivers can also be ordered through SoftPak and can be downloaded from the Compaq website:

<http://www.compaq.com>

Manual Installation

1. With the power off, insert the Compaq SmartStart and Support Software CD into the CD-ROM drive.
2. Start your system.
3. Select Manual Installation.
4. Follow the instructions displayed onscreen.

Diagnostics and Other Utilities

- When you select the Diagnostics and Utilities feature from the System Configuration Utility main menu, the utility prompts you to test, inspect, upgrade, and diagnose the server.
- Diagnostics and Utilities are located on the system configuration partition on the hard drive and must be accessed when a system configuration error is detected during the Power-On Self-Test (POST).
- Run the INSPECT Utility after the computer has been configured to obtain information about the operating system environment.
- For instructions on using the Diagnostics Utility and other Compaq utilities, refer to the online section on Diagnostics Tools.

Controller Naming Conventions

Some of the popular operating systems, including Microsoft DOS and Novell NetWare products, are listed in the table below with their corresponding driver names.

Table 6-2
Controller Driver Naming Conventions

Operating System	Driver Type	Driver File Name
Banyan VINES	NDIS	INTP100.LDM
DOS	Novell NetWare ODI	N1000DI.COM
	IBM LAN Server	NETFLX3.DOS
	Microsoft LAN Manager	N100.DOS
	Microsoft Client	N100.DOS
IBM OS/2	Novell NetWare ODI	N1000DI.SYS
	IBM LAN Server	N100.OS2
	Microsoft LAN Manager	N100.OS2
Microsoft Windows NT 4.0, Windows 2000	NDIS	N100NT.SYS N1000NT4.SYS
Microsoft Windows NT 3.51	NDIS	N100.SYS N1000NT3.SYS
Microsoft Windows 98	NDIS	N100NT5.SYS
Microsoft Windows 95 (Retail)	NDIS	N100.SYS
Microsoft Windows 95 (OSR2)	NDIS	N100NT.SYS
	Novell Client 32	N100.LAN
Novell NetWare 5.x (SP1), 4.x (SP6), 3.20	Novell 32-bit ODI Driver	N100.LAN N1000.LAN
SunSoft Solaris 2.6 Intel Platform Edition	DLPI	lprb
SunSoft Solaris 7 Intel Platform Edition	DLPI	iprb

continued

Table 6-2
Controller Driver Naming Conventions *continued*

Operating System	Driver Type	Driver File Name
SCO OpenServer 5	MDI	Cnet/cet
SCO UnixWare 7	MDI	Cnet/cet, n100, n1000c
SCO UnixWare 2.1.x	DLPI	Cnet/cet, n100, n1000c
SCO Open Server 3	LLI	Cet

Integrated Management Log

The Compaq Integrated Management Log (IML) records events and stores them in an easily viewable form. The IML records hundreds of events and then marks each event with a time-stamp with one-minute granularity.

Events listed in the IML are categorized as one of four event severity levels:

- Status - Indicates that the message is informational only.
- Repaired - Indicates that corrective action has been taken.
- Caution - Indicates a non-fatal error condition.
- Critical - Indicates a component failure.

The IML requires Compaq operating system-dependent drivers for proper functioning. Refer to the SmartStart and Support Software CD for instructions on installing the appropriate drivers.

Multiple Ways of Viewing the Log

You can view an event in the Integrated Management Log in several ways:

- From within the Compaq Insight Manager
- From within the Compaq Survey Utility
- From the Integrated Management Display (optional)

Compaq Insight Manager

The Compaq Insight Manager is a server management tool that provides in-depth fault, configuration, and performance monitoring of hundreds of Compaq servers from a single management console. System parameters are monitored and describe the status of all key server components to allow you to take immediate action.

You can view and print the event list from within the Insight Manager by following the instructions below. You can also mark a critical or caution event as repaired after the affected component has been replaced. For example, when a fan that has failed has been replaced, you can mark the event as repaired to lower the severity of the event.

Viewing the Event List

Use Insight Manager to view the event list:

1. From the Compaq Insight Manager, select the appropriate server.
2. Select View Device Data.

NOTE: The selected server is displayed with buttons around its perimeter.

3. Select the Recovery button.
4. Select Compaq Integrated Management Log.

NOTE: The Recovery/Integrated Management screen only allows you to view the event list. To print the list, refer to the instructions in the following section.

5. If a failed component has been replaced, select the event from the list.
6. Select Mark Repaired.

Printing the Event List

Use Insight Manager to print the event list:

1. From Insight Manager, select the appropriate server.

NOTE: The selected server is displayed with buttons around its perimeter.

2. Select the Configuration button.
3. Select the Recovery button.
4. Select Print.

Compaq Survey Utility

The Compaq Survey Utility is a serviceability tool available for Microsoft Windows NT and Novell NetWare that delivers online configuration capture-and-comparison to maximize server availability. This information is provided on the Documentation CD in the Server Setup and Management pack and is available on the Compaq website. Refer to the Documentation CD for information on installing and running the Survey Utility.

After you have run the Survey Utility, you can view the IML by loading the output of the utility (typically called *SURVEY.TXT*) into a text viewer such as Microsoft Notepad. The event list follows the system slot information. Once you have opened the text file, you can print it using the print feature of the viewer.

List of Events

The event list displays the affected components and the associated error messages. Though the same basic information is displayed, the format of the list may be different depending on how you are viewing it from within Insight Manager, or from within the Survey Utility.

The table below identifies the event types, or affected components, and associated event messages.

Table 7-1
Event Messages

Event Type	Event Message
Machine Environment	
Fan failure	System fan failure (fan X, location)
Overheat condition	System overheating (zone X, location)
Main Memory	
Correctable error threshold exceeded	Corrected memory error threshold passed (slot X, memory module X)
	Corrected memory error threshold passed (system memory)
	Corrected memory error threshold passed (memory module unknown)
	Uncorrectable memory error (slot X, memory module X)
	Uncorrectable memory error (system memory)
Uncorrectable error	Uncorrectable memory error (module unknown)
Processor	
Correctable error threshold exceeded	Processor correctable error threshold passed (slot X, socket X)
Uncorrectable error	Processor uncorrectable internal error (slot X, socket X)
PCI bus error	
	PCI bus error (slot X, bus X, device X, function X)

continued

Table 7-1
Event Messages *continued*

Event Type	Event Message
POST error	POST error: error message
Power Subsystem	
Power supply failure	System power supply failure (power supply X)
Power supply inserted	System power supply inserted (power supply X)
Power supply removed	System power supply removed (power supply X)
Power supply not redundant	System power supplies not redundant
System configuration battery low	Real-time clock battery failing
Automatic Server Recovery	
System lockup	ASR lockup detected: cause
Operating System	
System crash	Blue screen trap: cause [NT] Kernel panic: cause [UNIX] Abnormal program termination: cause [NetWare]
Automatic OS shutdown	Automatic operating system shutdown initiated due to fan failure Automatic operating system shutdown initiated due to overheat condition Fatal exception (number X, cause)
Note: Power subsystem event messages only apply when a redundant power supply unit is installed.	

Regulatory Compliance Notices

Regulatory Compliance Identification Numbers

For the purpose of regulatory compliance certifications and identification, your ProLiant ML370 server is assigned a Compaq series number. The Compaq series number for this product is Series ES1008. The series number can be found on the product label, along with the required approval markings and information. When requesting certification information for this product, always refer to this series number. This series number should not be confused with the marketing name or model number for your server.

Federal Communications Commission Notice

Part 15 of the Federal Communications Commission (FCC) Rules and Regulations has established Radio Frequency (RF) emission limits to provide an interference-free radio frequency spectrum. Many electronic devices, including computers, generate RF energy incidental to their intended function and are, therefore, covered by these rules. These rules place computers and related peripheral devices into two classes, A and B, depending upon their intended installation. Class A devices are those that may reasonably be expected to be installed in a business or commercial environment. Class B devices are those that may reasonably be expected to be installed in a residential environment, such as personal computers. The FCC requires

devices in both classes to bear a label indicating the interference potential of the device as well as additional operating instructions for the user.

The rating label on the device shows which class (A or B) the equipment falls into. Class B devices have an FCC logo or FCC ID on the label. Class A devices do not have an FCC logo or FCC ID on the label. Once the class of the device is determined, refer to the following corresponding statement.

Class A Equipment

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at personal expense.

Class B Equipment

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio or television technician for help.

Modifications

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by Compaq Computer Corporation may void the user's authority to operate the equipment.

Cables

Connections to this device must be made with shielded cables with metallic RFI/EMI connector hoods in order to maintain compliance with FCC Rules and Regulations.

Declaration of Conformity for Products Marked with the FCC Logo (United States Only)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

For questions regarding your product, contact:

Compaq Computer Corporation
P. O. Box 692000, Mail Stop 530113
Houston, Texas 77269-2000

or call 1-800-652-6672 (1-800-OK-COMPAQ). Use this telephone only in the United States or Canada. For continuous quality improvement, calls may be recorded or monitored.

For questions regarding this FCC declaration, contact:

Compaq Computer Corporation
P. O. Box 692000, Mail Stop 510101
Houston, Texas 77269-2000

or call 281-514-3333

To identify your product, refer to the part, series, or model number found on the chassis.

Canadian Notice (Avis Canadien)

Class A Equipment

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Class B Equipment

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

European Union Notice

Products with the CE Marking comply with both the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community.

Compliance with these directives implies conformity to the following European Norms (in brackets are the equivalent international standards):

- EN55022 (CISPR 22) - Electromagnetic Interference
- EN50082-1 (IEC801-2, IEC801-3, IEC801-4) - Electromagnetic Immunity
- EN60950 (IEC950) - Product Safety

Japanese Notice

ご使用になっている装置にVCCIマークが付いていましたら、次の説明文をお読み下さい。

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Taiwanese Notice

警告使用者：

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Chinese Notice

警告使用者：

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Laser Devices

All Compaq systems equipped with a laser device comply with safety standards, including International Electrotechnical Commission (IEC) 825. With specific regard to the laser, the equipment complies with laser product performance standards set by government agencies as a Class 1 laser product. The product does not emit hazardous light; the beam is totally enclosed during all modes of customer operation and maintenance.

Laser Safety Warnings



WARNING: To reduce the risk of exposure to hazardous radiation:

- Do not try to open the laser device enclosure. There are no user-serviceable components inside.
 - Do not operate controls, make adjustments, or perform procedures to the laser device other than those specified herein.
 - Allow only Compaq authorized service technicians to repair the laser device.
-

Compliance with CDRH Regulations

The Center for Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration implemented regulations for laser products on August 2, 1976. These regulations apply to laser products manufactured from August 1, 1976. Compliance is mandatory for products marketed in the United States.

Compliance with International Regulations

All Compaq systems equipped with laser devices comply with appropriate safety standards including IEC 825.

Laser Product Label

The following label or equivalent is located on the surface of the Compaq supplied laser device.



This label indicates that the product is classified as a CLASS 1 LASER PRODUCT. This label appears on a laser device installed in your product.

Laser Information

Laser Type	Semiconductor GaAIAs
Wave Length	780 nm +/- 35 nm
Divergence Angle	53.5 degrees +/- 0.5 degrees
Output Power	Less than 0.2 mW or 10,869 W·m-2 sr-1
Polarization	Circular 0.25
Numerical Aperture	0.45 inches +/- 0.04 inches

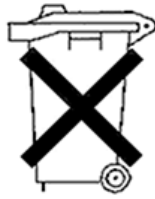
Battery Replacement Notice

Your computer is provided with an internal lithium battery or battery pack. There is a danger of explosion and risk of personal injury if the battery is incorrectly replaced or mistreated. Replacement is to be done by a Compaq authorized service provider using the Compaq spare designated for this product. For more information about battery replacement or proper disposal, contact your Compaq authorized reseller or your Compaq authorized service provider.



WARNING: Your computer contains an internal Lithium Manganese Dioxide, or a Vanadium Pentoxide, or an alkaline battery pack. There is risk of fire and burns if the battery pack is not handled properly. To reduce the risk of personal injury:

- Do not attempt to recharge the battery
- Do not expose to temperatures higher than 60°C.
- Do not disassemble, crush, puncture, short external contacts, or dispose of in fire or water.
- Replace only with the Compaq spare designated for this product.



Batteries, battery packs, and accumulators should not be disposed of together with the general household waste. In order to forward them to recycling or proper disposal, please use the public collection system or return them to Compaq, your authorized Compaq Partners, or their agents.

Appendix **B**

Electrostatic Discharge

To prevent damage to the system, be aware of the precautions you need to follow when setting up the system or handling parts. A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

To prevent electrostatic damage, observe the following precautions:

- Avoid hand contact by transporting and storing products in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- Place parts on a grounded surface before removing them from their containers.
- Avoid touching pins, leads, or circuitry.
- Always be properly grounded when touching a static-sensitive component or assembly.

Grounding Methods

There are several methods for grounding. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:

- Use a wrist strap connected by a ground cord to a grounded workstation or computer chassis. Wrist straps are flexible straps with a minimum of 1 megohm \pm 10 percent resistance in the ground cords. To provide proper ground, wear the strap snug against the skin.
- Use heel straps, toe straps, or boot straps at standing workstations. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.
- Use conductive field service tools.
- Use a portable field service kit with a folding static-dissipating workmat.

If you do not have any of the suggested equipment for proper grounding, have a Compaq authorized reseller install the part.

NOTE: For more information on static electricity, or for assistance with product installation, contact your Compaq authorized reseller.

Installing a New Battery

Compaq ProLiant ML370 servers include memory devices that require a battery to retain stored information. These devices, and the battery, are located on the system board.

System Board Battery Replacement

When your server no longer automatically displays the correct date and time, you may need to replace the lithium battery that provides power to the real-time clock. Under normal use, battery life is usually about five to ten years. For optimal system performance, order a Compaq lithium replacement battery, type CR2450N, part number 179322-xxx.

After you have completed the battery installation, run the System Configuration Utility to reconfigure your system.

Installing the System Board Battery

To install the new battery, complete the following steps:

1. If the server is on, place it in Standby mode and disconnect the power. Refer to Chapter 2, “Installing the Tower Model,” for detailed instructions on preparing the server for installation or upgrade.
2. For the rack model, pull the server forward in the rack for access to the inside of the server.
3. Remove the small access panel.

4. Locate the battery holder on the system board.
5. Remove the old battery from the battery socket as shown below.

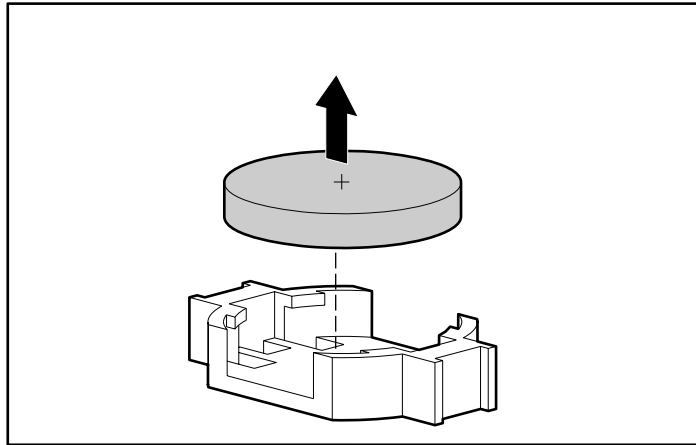


Figure C-1. Removing the battery

6. Install the new battery.
7. Replace the access panel and power cord.
8. Turn on the server.
9. Run the System Configuration Utility to reconfigure the system.

Specifications and Connector Interfaces

This appendix provides operating and performance specifications for the tower and rack models of the Compaq ProLiant ML370 server. Also provided are the connector interfaces included in all server models.

For other specifications, refer to the Documentation CD shipped with your server.

ProLiant ML370 Servers

Tower Model

Table D-1 Operating and Performance Specifications for the ProLiant ML370 Tower Model		
Dimensions		
Height (without feet)	17.92 inch	45.52 cm
Depth	22.67 inch	57.58 cm
Width	8.83 inch	22.43 cm

continued

Table D-1
Operating and Performance Specifications
for the ProLiant ML370 Tower Model *continued*

Dimensions		
Weight		
No drives installed	50.0 lb	22.68 kg
Input Requirements		
Rated input voltage	100 to 240 VAC	
Rated input frequency	50 - 60 Hz	
Rated input current	6A (110 V) – 3A (220 V)	
Rated input power	550 W	
BTUs per hour	1880	
Power Supply Output Power		
Rated steady-state power	325 W	
Maximum peak power	350 W	
Temperature Range		
Operating	50° to 95°F	10° to 35°C
Shipping	-22° to 122°F	-30° to 50°C
Relative Humidity (noncondensing)		
Operating	8% to 90%	8% to 90%
Non-operating	5% to 95%	5% to 95%
Wet Bulb Temperature		
Maximum	101.7°F	38.7°C

Rack Model

Table D-2
Operating and Performance Specifications
for the ProLiant ML370 Rack Model

Dimensions		
Height	8.67 inch	22.02 cm
Depth	22.75 inch	57.78 cm
Width	19.0 inch	48.26 cm
Weight		
No drives installed	50.0 lb	22.68 kg
Input Requirements		
Rated input voltage	100 to 240 VAC	
Rated input frequency	50 - 60 Hz	
Rated input current	6A (110 V) - 3A (220 V)	
Rated input power	550 W	
BTUs per hour	1880	
Power Supply Output Power		
Rated steady-state power	325 W	
Maximum peak power	350 W	
Temperature Range		
Operating	50° to 95°F	10° to 35°C
Shipping	-22° to 122°F	-30° to 50°C
Relative Humidity (noncondensing)		
Operating	8% to 90%	8% to 90%
Non-operating	5% to 95%	5% to 95%
Wet Bulb Temperature		
Maximum	101.7°F	38.7°C

Rack and Tower Models with Optional Redundant Power Supply

Table D-3
Operating and Performance Specifications
for Tower and Rack Models with Redundant Power Supply

Dimensions		
Height (without feet)	17.92 inch	45.52 cm
Depth	22.67 inch	57.58 cm
Width	8.83 inch	22.43 cm
Weight		
No drives installed	50.0 lb	22.68 kg
Input Requirements		
Rated input voltage	100 to 240 VAC	
Rated input frequency	50 - 60 Hz	
Rated input current	8A (110 V) – 4A (220 V)	
Rated input power	728 W	
BTUs per hour	2490	
Power Supply Output Power		
Rated steady-state power	400 W	
Maximum peak power	445 W	
Temperature Range		
Operating	50° to 95°F	10° to 35°C
Shipping	-22° to 122°F	-30° to 50°C
Relative Humidity (noncondensing)		
Operating	8% to 90%	8% to 90%
Non-operating	5% to 95%	5% to 95%
Wet Bulb Temperature		
Maximum	101.7°F	38.7°C

Connector Interfaces

For the pinouts and signals of the following connector interfaces, refer to the Documentation CD shipped with your server.

- Integrated Dual Channel Wide Ultra2 SCSI Controller on port 1 (internal and external) and port 2 (internal only)
- Hot-plug keyboard
- Mouse
- Serial (2)
- Parallel
- IDE interface for CD-ROM drive
- Diskette connector interface
- LCD connector interface
- NC3163 Fast Ethernet NIC Embedded 10/100 WOL with RJ-45 interface
- Video

Switches and Jumpers

When you add or remove a component or change a security feature, you must reconfigure the computer to recognize these changes. If the system configuration is incorrect, your computer may not work properly and you may receive error messages on the screen. Setting the system board switches is part of the reconfiguration process, along with running the System Configuration Utility.

Setting System Board Switches

Compaq ProLiant ML370 servers have two switch banks (1 and 2) located on the system board that are used to set the overall configuration of your server:

- The processor configuration switch (SW1) is an eight-position switch (S1-S8) that provides the processor switch settings of your server. The settings for this switch are reserved.

IMPORTANT: Do not reconfigure the processor switch settings manually. When you upgrade or add a processor, the system automatically detects and reconfigures the processor switch settings

- The system configuration switch (SW2) is a six-position switch (S1-S6) that is used for system configuration.

Refer to the labels on the access panels or to the following table for appropriate system configuration switch settings.

Processor Configuration Switch Settings (SW1)

Processor switch settings are reserved by default from the factory. If the processor is replaced, or if another processor is added, the system automatically detects and configures the processor switch settings.

System Configuration Switch Settings (SW2 Settings)

The table below defines the function for each switch setting on SW2.

Table E-1
System Configuration Switch Settings
(ON Activates the Function)

Switch Position	Function	Rack Default	Tower Default
1	Embedded video disable	Off	Off
2	Configuration lock	Off	Off
3	Rack mount	On	Off
4	Diskette drive override	Off	Off
5	Password disable	Off	Off
6	Maintenance	Off	Off

NIC Operating Mode

ProLiant ML370 servers are equipped with the NC3163 Fast Ethernet NIC Embedded 10/100 WOL network interface controller (NIC). The controller automatically differentiates between 10-MB and 100-MB environments when the RJ-45 connector is used.

SCSI Device Jumper Settings

No two SCSI devices connected to the same SCSI controller can have the same SCSI ID. If another SCSI device is connected to the same controller, check its SCSI ID from the System Configuration Utility before beginning the installation procedure for this additional drive. The SCSI ID is set by jumpers ID 2, ID 1, and ID 0 located on each SCSI device.

The table below provides the SCSI ID jumper settings for Compaq SCSI hard drives.

Table E-2
SCSI Device Jumper ID Settings

SCSI ID	Bit 2	Bit 1	Bit 0
6	On	On	Off
5	On	Off	On
4	On	Off	Off
3	Off	On	On
2	Off	On	Off
1	Off	Off	On
0	Off	Off	Off

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